MONITORING REPORT FORM (CDM-MR) *
Version 01 - in effect as of: 28/09/2010

CONTENTS

A. General description of the project activity
   A.1. Brief description of the project activity
   A.2. Project participants
   A.3. Location of the project activity
   A.4. Technical description of the project
   A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity
   A.6. Registration date of the project activity
   A.7. Crediting period of the project activity and related information
   A.8. Name of responsible person(s)/entity(ies)

B. Implementation of the project activity
   B.1. Implementation status of the project activity
   B.2. Revision of the monitoring plan
   B.3. Request for deviation applied to this monitoring period
   B.4. Notification or request of approval of changes

C. Description of the monitoring system

D. Data and parameters monitored
   D.1. Data and parameters used to calculate baseline emissions
   D.2. Data and parameters used to calculate project emissions
   D.3. Data and parameters used to calculate leakage emissions
   D.4. Other relevant data and parameters

E. Emission reductions calculation
   E.1. Baseline emissions calculation
   E.2. Project emissions calculation
   E.3. Leakage calculation
   E.4. Emission reductions calculation
   E.5. Comparison of actual emission reductions with estimates in the registered CDM-PDD
   E.6. Remarks on difference from estimated value

MONITORING REPORT
Version 02 and dated on 23/05/2012

Facilitating Reforestation for Guangxi Watershed Management in Pearl River Basin
Ref 0547
1st monitoring (first and last days included (01/04/2006 – 31/12/2011)

SECTION A. General description of the project activity

A.1. Brief description of the project activity: >>

>>

The A/R CDM project activity, Facilitating Reforestation for Guangxi Watershed Management in Pearl River Basin has been under implementation since 2006 in the Guangxi province of China. The project has been implemented afforestation and reforestation (A/R) activities to achieve multiple objectives of restoring the degraded areas,soil, water and biodiversity conservation and poverty alleviation in the Guangxi watershed in the Pearl River basin. The specific objectives of the project are::

(1) To sequester CO_2 through forest restoration in small watershed areas and pilot reforestation activities to generate high-quality GHG emission reductions that can be measured, monitored and verified;
(2) To enhance biodiversity conservation by increasing the connectivity of forests adjacent to nature reserves;
(3) To improve soil and water conservation;
(4) To generate income for local communities.

To achieve the objectives, the 3,008.8 ha of multiple-use forests have been established on degraded lands in Huanjiang County and Cangwu County of Guangxi Province. The major species covered in the forestation modelsare: *Pinus massoniana* (1,464.8 ha), *Cunninghamia lanceolata* (148.3 ha), *Schima superba* (297.6 ha), *Eucalyptus* sp. (821.7 ha), *Liquidambar formosana* (89.4 ha), *Quercus griffithii* (26.8 ha), *P. massoniana* mixed with L. *formosana* (109.2 ha), and P. massoniana mixed with C. lanceolata (51.0 ha). The anthropogenic GHG net removals by sinks from the first monitoring period of the project are 131, 964.1 t CO2e .

The A/R CDM project activity has been implemented involving farmers/communities and forest companies through following cooperative arrangements .

(1) Shareholding arrangements between local farmers/communities and forest company. The farmers/communities contribute land and labour and local forest companies invest in planting activities, provide technical inputs and manage plantations during the crediting period. The contractual arrangements between the farmers/communities and the companies cover the plantation establishment and management responsibilities, inputs and benefit sharing. The forest companies pay farmers for labour input to the project, providing income to farmers through temporary employment. The project area of 2,651.9 ha is managed under this model.

(2) Arrangements involving farmers groups. Individual farmers voluntarily invest in groups and undertake project activities such as site preparation, planting and forest management. The local forestry agencies provide assistance for the design of planting models, training, supervision, and other technical services. Income from forest products and sale of CERs accrue solely to local farmers. The project area of 356.9 ha is managed under this arrangement.

The farmers of the project have contracted the forest company to conduct project registration, implementation and monitoring of the A/R CDM project activity, and sale of CERs on behalf of the project.

The A/R CDM project activity has been implemented separately, but linked with a larger umbrella Guangxi Integrated Forestry Development and Conservation Project (GIFDCP), which supports monitoring of environmental and social impacts of the project in relation to natural forest, watershed and biodiversity aspects of the Guangxi Zhuang Autonomous Region.

A.2. Project Participants

>>

Table A-1 Project participants

Name of Party involved (*) ((host) indicates a host Party)	**Private and/or public entity(ies) project participants (*)** (as applicable)	**Kindly indicate if the Party involved wishes to be considered as project participant** (Yes/No)
People's Republic of China (host)	Xinghuan Forestry Development Company Ltd	No
France	Eco-Carbone	No
Japan	Idemitsu Kosan Co., Ltd.; Japan Petroleum Exploration Co., Ltd.; The Japan Iron and Steel Federation.; Sumitomo Chemical; Sumitomo Joint Electric Power Co., Ltd.; The Okinawa Electric Power Co., Inc. ; The Tokyo Electric Power Co., Ltd. ; Suntory Holdings Limited	No
Luxembourg	Government of Luxembourg – Ministry of sustainable Development and Infrastructure Department of Environment	Yes
Canada	Government of Canada - Ministry of Foreign Affairs and International Trade	Yes
Italy	International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)	Yes
Spain	International Bank for Reconstruction and Development (IBRD) as Trustee of the BioCarbon Fund (BioCF)	Yes

A.3. Location of the project activity:

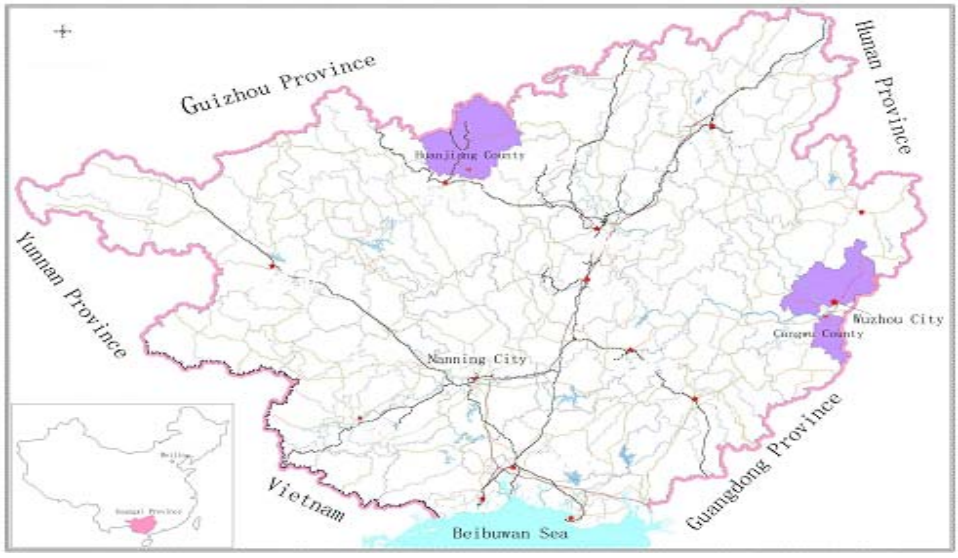
>>

The A/R CDM project activity is located in Cangwu County (in the Eastern part of map) and Huanjiang County (in the Northern part of map), Guangxi Zhuang Autonomous Region, in southern China (Fig.A-1).

Lands to be reforested are located in 13 villages of 4 townships in Cangwu County and 14 villages of 6 townships in Huanjiang County.

Table A-2 List of Counties, towns/townships and villages involved[1]

Cangwu County		Longitude (E, degree)	Latitude (N, degree)
Townships	Villages		
Dapo	Shengzhou	111.30214-111.38319	23.18890-23.24468
	Xinlong	111.26641-111.31870	23.18389-23.23788
	Dayan	111.32941-111.39390	23.14746-23.18596
Xindi	Diancun	111.14224-111.18855	23.26278-23.31513
	Dongxin	111.14349-111.18876	23.30142-23.32902
	Xunchun	111.13368-111.20041	23.15172-23.18319
	Dacun	11.189990-111.21657	23.33486-23.35340
	Daton	111.16250-111.20237	23.30050-23.35690
Longxu	Enyi	111.24467-111.27654	23.38740-23.44081
	Daen	111.18076-111.24528	23.34605-23.39321
Shatou	Cantian	111.48480-111.58910	24.04140-24.15430
	Shichuan	111.48530-111.53740	24.09310-24.17200
	Shentang	111.38871-111.47016	23.93381-24.04026
Huanjiang County			
Xunle	Taiping	108.30170-108.36460	25.24880-25.34270
	Shangang	108.28420-108.41080	25.44830-25.54000
Chuanshan	Hedun	108.07210-108.18020	25.11300-25.20940
Mulun	Leyi	107.96206-108.02698	25.07901-25.13427
Minglun	Minglun	108.32830-108.47680	25.15100-25.23620
	Baixiang	108.38310-108.44510	25.13800-25.19440
	Cuishan	108.34180-108.45050	25.26620-25.34140
Longyan	Huangzhong	108.36910-108.46960	25.37330-25.45990
	Jiuwei	108.35310-108.43720	25.31870-25.37580
	Dake	108.50030-108.61030	25.27220-25.33440
	chaoge	108.49880-108.59050	25.31400-25.41600
	Longyan	108.44375-108.51672	25.25342-25.30658
	Chenghuang	108.34800-108.42300	25.35410-25.42670
Shangchao	Beishan	108.12510-108.23410	25.18670-25.30860



A.4. Technical description of the project

>>

[1] The coordinates in the table are Beijing 1954 geographical coordinate system.

The project implemented reforestation through direct planting of tree spcies to restore the degraded lands using environmental-friendly techniques. Good practice guidance of reforestation and experience gained from the World Bank financed forestry projects were adopted in the project. The following technical and regulatory standards have been followed:

- Artificial Afforestation Technical Regulation: GB/T 15776-2006;
- Non-commercial Forest Construction-Technical regulation: GB/T 18337.3-2001;
- Non-commercial forest construction-verification regulation:GB/T 18337.4-2008;;
- Design Code for Afforestation Operation: LY/T 1607-2003;
- Regulations for Tending of Forest: GB/T 15781-1995;
- Tree Seedling Quality Grading of Major Species for Afforestation: GB 6000－1999;
- Technical Regulations for Cultivation of Tree Seedlings: GB/T 6001-1985.

The local forestry agencies, i.e., Guangxi Provincial Forestry Department, Cangwu and Huanjiang County Forestry Bureaus, Guangxi Forestry Inventory and Design Institute and Guangxi Forestry Research Institute provided guidance, and quality control in the implementation of the A/R CDM project activity. The up-to-date technologies and silvicultural models were adopted. No technology has been transferred to the host party.

To prevent soil erosion, reduce GHG emission and protect existing carbon stocks, site burning and overall tillage were not employed. Small pits of diameter 40-50cm and depth of 40cm were dug along the contours. To minimize risk of natural events (fire, pest, insects and disease) and to maximize environmental and social benefits, mixed species arrangements were adopted a. All species except eucalyptus are native to the region.

seedlings of eucalyptus deveoped using tissue culture method were purchased from Guangxi Dongmen Forestry Farm, and then cultured in the nurseries of Cangwu and Huangjiang Counties. Seeds of other species were collected from local seed orchards or parent tree gardens and grown in temporary on-site nurseries. All seed and tissue cultured seedlings were subjected to quality certification. Seedlings are produced in plastic tubes. This technique ensures the control of growing conditions in the early stages of planting, and imrpoves the growth and survival of planted seedlings.

Planting activities were completed over six years, starting in 2006. The major species of the project and their spacing is as follows:

- *Eucalyptus* sp.: 2 m × 4 m;
- *P. massoniana* and *S. superba*: 2 m × 2.5 m;
- *Quercus* sp and *C. lanceolata*: 2 m × 2 m;
- *L. formosana*: 2 m × 3 m.

To ensure high survival rates and good growth in the early stages, manual weeding was conducted two to three times a year during the first three years of planting. Survival rates were checked and re-planting was conducted as necessary such as on lands affected from snowstorms.

On poor soils, small quantities of nitrogenous fertilizer with 10% nitrogen content was applied to eucalyptus at the rate of : 750g per tree at planting, 300g per tree in the second year and 400g per tree in the third year.

No harvesting has been conducted in the project during the first monitoring period.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

>>

The approved afforestation and reforestation baseline and monitoring methodology "Reforestation of degraded land" (AR-AM0001/version 02); and methodological tools, guidelines and guidance listed below have been implemented in the project.

- A/R Methodological Tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" (Version 02.1.0);

- A/R Methodological Tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0);
- Guidance provided in para 35, EB 42 meeting report regarding accounting of GHG emissions in A/R CDM project activities;
- Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities (Version 01.0)
- Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents (Version 02.0)
- A/R Methodological Tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity" (Version 03.1.0)
- A/R Methodological Tool "Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.0)

In addition, relevant technical guidelines for national and local forest inventory followed in the project, include:

- Technical guidelines for forest resource planning and design. State Forestry Administration (SFA), April 2003
- Technical guidelines for national forest inventory. SFA 2004 No.25
- Technical guidelines for forest resource planning and design in Guangxi. Guangxi Forestry Department, Feb 2009
- Standard Operation Procedures for 8th forest inventory in Guangxi. Guangxi Forestry Department, April 2010

A.6. Registration date of the project activity:

>>10/11/2006

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

>>

Start date: 01/04/2006
Crediting period: 30 years (from 01/04/2006 to 31/03/2036), fixed.

A.8. Name of responsible person(s)/entity(ies):

>>

- Mr. Rama Chandra Reddy: rreddy1@worldbank.org
- Ms Jin Liu: jliu@worldbank.org
- Mr. Xiaoquan Zhang: zxiaoquan@tnc.org
- Ms. Zhuping Mo: mzp1968@163.com
- Mr. Sanzhong He: hesanzhong@126.com

SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

>>

The project started on April 1st 2006. As outlined in the PDD, 4,000 ha was proposed to be planted during 2006 and 2007. However, the actual planted area in the project during the monitoring period is

3008.8 ha, i.e., 75.2% of the area proposed for planting . The details of area planted in each land parcel by year are outlined in Annex I. The comparison of the planted area by year vis-à-vis area proposed for planting in the registered PDD is presented in table B.1 below.

The adverse climate events such as snow/ice storms and droughts damaged significant area of the project. The snow/ice storms in early 2008 damaged 595.1 ha of plantation, and were re-established. Out of the re-established area, 120.3 ha of eucalyptus plantation again suffered from the snow/ice storms again during early 2011.

Additionally, 197.8 ha of planted area also was affected by extreme droughts during 2009-2011 and had to be re-planted. .

Table B.1 Planted area in project[2] as compared to planting plan in PDD (ha)

Plantation model	Year						
	Total	2006	2007	2008	2009	2010	2011
Eucalyptus - actual area planted	**821.7**	487.7	30.3	176.9	6.7	113.1	7.0
- area proposed in the PDD	**1000.0**	850.0	150.0				
Pine - actual area planted	**1464.8**	212.9	184.7	790.7	67.7	34.6	174.2
- area proposed in the PDD	**1320.0**	388.0	932.0				
Oak - actual area planted	**26.8**			22.3	4.5		
- area proposed in the PDD	**360.0**	40.0	320.0				
Schima - actual area planted	**297.6**	120.6	32.0	18.3	101.3		25.4
- area proposed in the PDD	**240.0**	88.0	152.0				
Maple- actual area planted	**89.4**	19.1	11.8	58.5			
- area proposed in the PDD	**900.0**	294.0	606.0				
Chinese fir- actual area planted	**148.3**	16.8	21.0	94.4			16.1
- area proposed in the PDD	**180.0**		180.0				
Pine+maple+oak irregular- actual area	**109.2**	25.7		83.5			
Pine + Chinese fir irregular- actual area	**51.0**			51.0			
Total area planted	**3008.8**	**882.8**	**279.8**	**1295.6**	**180.2**	**147.7**	**222.7**
Total area proposed in the PDD	**4000.0**	**1660.0**	**2340.0**				

B.2. Revision of the monitoring plan

>>

[2] Calculated from Annex I

The revision of monitoring plan has not been undertaken considering that the paragraph 6 of the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document (EB 48, annex 66). As per the "Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents" (Version 02.0) (Annex 24, EB 66), the types of changes from the project description of the A/R CDM project activity in the PDD as listed below are identified as minor in nature. Therefore as per shall be addressed through the verification stage by the designated operational entity without the need for submitting a notification of changes to the PDD or a request for revision to the monitoring plan.

The changes in species composition and planting time and the reduction of project area have not impacted the baseline scenario and additionalityof the project. Therefore, as per the paragraph 6 of the "Procedures for notifying and requesting approval of changes from the project activity as described in the registered project design document" (EB 48, annex 66) and the "Guidelines on accounting of specified types of changes in A/R CDM project activities from the description in registered project design documents" (Version 02.0) (Annex 24, EB66), these changes are identified as minor in nature, and are to be confirmed by the designated operational entity at the verification stage without the need for submitting a notification or a request for approval, as listed in table B.2 below.

Table B.2 Types of changes from the description in the registered PDD as outlined in the guidelines (Annex 24, EB66) and their applicability to the implemented project

No.	Types of changes from the project description in the PDD of an A/R CDM project activity	Applicability to the project
a)	Changes in year-wise areas planted, possibly resulting in a part of the project area not being planted;	Yes, as a result of changes in year-wise areas planted, 3008.8 ha out of 4000.0 ha were planted. Therefore, 991.2 ha of the project area was not planted
b)	Changes in species composition, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, changes in species composition and stand models occurred during the project implementation. It was found that due to poor site conditions and location specific factors, survival and growth rates of some species were not as projected in the PDD. In addition, small changes to the stand models needed to be made as per the requirements of field implementation. The species planted are relevant to the project area and the changes in species composition of the project are consistent with the baseline identification and additionality demonstration made at the validation stage, which can be demonstrated as below. **For the baseline identification:** As the changes in project area do not affect the baseline information. The 35 ha with growing trees in stratum II remains unchanged, hence the baseline net removals by sinks remains same as PDD). The changes of area in other baseline strata also do not affect baseline removals given no growing trees on these strata. **For the additionality**: - In the project design the revenue from the project activity was expected from the short rotation oak (7 years) and eucalyptus (10 years). The area of eucalyptus and oak actually planted is 28.2% of total planted area, compared to 34% designed in PDD. The revenue will reduce relative to PDD; - Price level (for labors and seedlings) in China has been increasing year after year, while the unit costs in PDD were based on 2004 price level. The actual cost is much higher than those used in PDD; - The adverse climate events such as snow/ice storms and droughts damaged significant area of the project. The snow/ice storms in early 2008 damaged 595.1 ha of plantation, and were re-established. Out of the re-established area, 120.3 ha of eucalyptus

		plantation again suffered from the snow/ice storms again during early 2011. 197.8 ha of planted area also was affected by extreme droughts during 2009-2011 and had to be re-planted. The repeated planting has significantly increase the project cost. - In summary, the reduction of project revenue and increase of the project cost would reduce the project internal return rate relative PDD. Therefore the change in the project area will not affect the additionality.
c)	Changes in stocking density, if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	No changes in stocking density.
d)	Changes in timing and choice of silvicultural operations;	Yes, changes in species composition and stand models resulted in the changes to potential timing and choice of silvicultural operation.
e)	Changes in timing of harvest occurring before the third verification;	Yes, changes in species composition and stand models resulted in the changes to potential harvesting before the third verification (harvesting of eucalyptus and thinning for other species).
f)	Changes related to collection of non-timber forest products;	Yes, changes in species composition and stand models resulted in the changes to the resin collection of pine plantation.
g)	Changes in tree/shrubs propagation method;	No
h)	Changes in post-harvest re-planting/regeneration methods;	Not applicable as planted areas are not harvested
i)	Changes in technology employed;	No
j)	Changes in inputs (e.g. fertilizers, certified seeds, watering);	No
k)	Changes in stratification for sampling;	Yes, *ex post* stratification has been implemented taking into account of the changes to ex-ante strata resulting from impacts of site conditions, planting time, growth rates of specie and other location specific factors.
l)	Changes in type of sample plots (e.g. temporary, permanent, point-sampling);	No
m)	Changes in number of sample plots and their allocation to strata;	Yes, as a follow up to ex post stratification, the calculation of number sample plots and their allocatin is been revised.
n)	Changes in the project boundary (limited to reduction in project area), if the changes are demonstrated at verification to be consistent with the baseline identification and additionality demonstration made at the validation stage;	Yes, Changes in project boundary occurred as a consequence of the reduction in project area by 991.2 ha. The changes to project boundary as a consequence of reduction in project area are consistent with the baseline identification and additionality demonstration at the validation stage.
o)	Changes in quality assurance/quality control (QA/QC) procedures, where it can be demonstrated that the changed QA/QC procedures are used by the National Forest Inventory or were applied in another registered A/R CDM project activity;	Yes, Changes in quality assurance/quality control procedures are consistent with procedures used by the national forest inventory and are applied in another A/R CDM project activity.

p)	Changes in parameters, equations, or methods used in tree biomass estimation, if the applicability of the changed parameters, equations, or methods is demonstrated at verification using the .Tool for demonstration of applicability of allometric equations and volume equations in A/R CDM project activities" when available, or if the changed parameters, equations, or methods do not result in a decrease in precision of the estimate of tree biomass;	No
q)	Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool "Changes from provisions regarding shifting of pre-project activities, if the related emissions are estimated at verification using the tool "Estimation of the increase in greenhouse gas (GHG) emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity". and are accounted for as leakage;	Not Applicable
r)	Changes in use of fire in site preparation, if the related emissions are estimated at verification using the tool "Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity" and are accounted for as project emissions;	Not Applicable
s)	Changes in extent of soil disturbance in site preparation, if the related emissions are estimated at verification using Equation (2) of the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" and are accounted for as project emissions;	No
t)	Changes in methods of estimation of changes in any carbon pool, if the method applied at verification uses the latest version of the relevant approved tool and the applicability conditions of the methodology applied are consistent with the applicability conditions of the tool.	Yes. The latest methodological tool for trees and shrubs will be used

As per the "Guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities" (Version 01.0), several early versions of methodologies applied in registered A/R CDM project activities contain requirements that were withdrawn during revisions/improvements of these methodologies as part of the improvement process of the standards, and the guidelines allow a registered A/R CDM project activity to apply, at the time of verification, the improvements in the methodology that occurred after the date of registration of the project activity. The applicability of these guidelines to the implemented project is listed in table B.3 below.

Table B.3 Applicability of guidelines to the implemented project

Requirement	Methodology	Guidelines	Applicability to the project
Monitoring of	AR-AM0001 v.02,	(i) Only data and parameters	Yes, data and parameters

data and parameters	et al	obtained from field measurement are required to be monitored; (ii) Monitoring is not required for data, parameters, or variables appearing as intermediate values in calculation steps and those taken from existing sources (e.g. published literature)	required to be monitored in the methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" were measured
Sampling design, sample plot lay-out, and marking of permanent sample plots	AR-ACM0001 v.03 AR-AM0001 v.02, et al	(i) Use of temporary sample plots; (ii) Random lay-out of sample plots; (iii) A maximum allowable relative margin of error of the mean, for estimation of aboveground tree biomass, of ± 10% at 90% confidence level shall be allowed.	Yes, 90% confidence level was applied
Accounting for uncertainty	AR-ACM0001 v.03 AR-AM0001 v.02, et al	Requirements related to uncertainty assessment, uncertainty analysis, methods of combining uncertainties, and uncertainty in expert judgement are superfluous and compliance with these requirements shall not be enforced.	Yes, uncertainty analysis was conducted following the methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"
Field measurement of soil organic carbon	AR-AM0002 v.01	(i) Instead of field measurement of soil organic carbon, the "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities" shall be used for areas which meet the applicability conditions of the tool; or (ii) The value of change in soil organic carbon shall be set to zero. Consequently, monitoring of data and parameters related to estimation of changes in soil organic carbon shall not be required.	Not applicable
Clearance or burning of herbaceous vegetation	AR-AM0001 v.02, et al	(i) Changes in carbon stocks resulting from clearance of herbaceous vegetation shall be set to zero; (ii) Emissions resulting from clearance or burning of herbaceous vegetation shall be set to zero.	Yes, loss of carbon in living herbaceous vegetation was not accounted for

		Consequently, monitoring of data and parameters related to (i) and (ii) above shall not be required.	
Estimation of emissions of nitrous oxide from use of fertilizers	AR-AM0001 v.02, et al	Estimation and accounting of emissions of nitrous oxide from use of fertilizers shall not be required. Consequently, monitoring of data and parameters related to the above-mentioned emissions shall not be required.	Yes, emissions of nitrous oxide from use of fertilizers were not monitored and accounted for.
Burning of fossil fuel	AR-AM0001 v.02, et al	Estimation and accounting of emissions from burning of fossil fuel, both within and outside the project boundary, shall not be required. Consequently, monitoring of data and parameters related to the above mentioned emissions shall not be required.	Yes, emissions from burning of fossil fuel, both within and outside the project boundary were not monitored and accounted for.

B.3. Request for deviation applied to this monitoring period

>>

None.

B.4. Notification or request of approval of changes

>>

None (see section B.2 above for justification).

SECTION C. Description of the monitoring system

>>

For the purpose of the monitoring, standard operating procedures have been developed and followed throughout the monitoring process, and summarized as follows.

1. Monitoring of the baseline net GHG removals by sinks

The baseline net GHG removals by sinks do not need to be monitored as per the revised approved methodology AR-AM0001/version 02.

2. Monitoring of the boundary of the implemented A/R CDM project activity

Monitoring of the project boundary is done using the below procedures.

- Field survey of the discrete areas of the project on which tree planting is undertaken.
- Confirmation of the geographical boundary of the sites using GPS. In case that the boundary of land parcel overlaps with existing land management unit (compartment and/or sub-compartment), latitude and longitude of major corner of the land parcels were confirmed using GPS.
- Checking to ensure that the actual boundary is consistent with the description in the PDD section A.

- If the actual boundary falls outside of the boundary referred in section A of the PDD, the part of lands that are outside the designed boundary would not be accounted as a part of the implemented A/R CDM project activity.
- Input the measured geographical positions into GIS system and calculate the eligible area of each stratum.
- The project boundary will be monitored periodically through the crediting period. If the boundary is changed during the crediting period, the boundary will be modified and reported to DOE for subsequent verifications. The area will then be excluded from the project monitoring. Similarly, if the planting on certain lands within the project boundary fails, and other land uses take the place, these areas will be documented and excluded from the project.

3. Monitoring of the project implementation

To ensure the project implementation and the practices described in section A of the PDD are well-implemented, the monitoring covered following activities :

- Confirmation that the site preparation practices as per those outlined in the PDD, and no slash and burn and overall tillage are used in the site and soil preparation.
- Confirmation that site preparation does not cause significant longer term net emissions from soil carbon. This is done by checking and confirming that site preparation techniques are as described in Section A.4.8 of the PDD. As the area disturbed through site preparation accounts for only 2-5% of the total area of the discrete areas, it is inferred that there are no significant long-term net emissions from site preparation activities.
- Survival checking
  - The initial survival rate of planted trees are checked within three months after the planting, and re-planting was conducted if the survival rate was lower than 90%.
  - Final survival checking was conducted for each plantation site after three years of planting.

.

- Confirmation that the weeding and fertilizer application practice areimplemented as planned.
- Checking the area of planted species and planting year for each stratum.

The project implementation was monitored through sub-compartment monitoring card (Annex II).

4. Stratification

The ex ante stratification was done based on the information on the site conditions (soil type, soil organic matter and nitrogen content, etc) and species/models and planting years available prior to the start of the project. However, Observation and pre-measurement found that growth rate of same species is less relevant to site conditions applied, and trees planted in consecutive years showed a small variation due to poor site conditions. The ex ante stratification adopted at the time of project design stage resulted in larger within-stratum variation than between-stratum variation. Furthermore, the area of each species/models has changed due to reduction of project area and planting schedule was delayed. Therefore, a revision to the ex ante stratification have been conducted taking into account the changes in the area, species/stand models included in the project, the schedule of planting adopted during project implementation, and growth rates of species relevant to site conditions. Some of plantations planted in two consecutive were merged into one stratum considering the small variation in the growth rates of tree species planted in the consecutive years. The stratification map was created on a GIS platform. The project area was stratified into 22 strata (see table C.1 for the detailed ex post stratification). The boundary of strata was determined using PDA and GPS by going along the demarcation line of two connected strata.

Table C.1 ex post stratification

Species/models	Planting year	Stratum ID	Area (ha)[2]	comments
Pine (Cangwu)	2006-2007	S-1	369.4	
	2008	S-2	236.2	Tree growth not measurable
	2009-2011	S-3	122.9	Tree growth not measurable
Pine (Huangjiang)	2007-2008	S-4	417.4	
	2008	S-5	165.3	Tree growth not measurable
	2009-2011	S-6	153.6	Tree growth not measurable
Chinese fir	2006-2007	S-7	37.8	
	2008	S-8	94.4	
	2011	S-9	16.1	Tree growth not measurable
Schima	2006-2007	S-10	152.6	Tree growth not measurable
	2008-2009	S-11	119.6	Tree growth not measurable
	2011	S-12	25.4	Tree growth not measurable
Eucalyptus	2006-2007	S-13	518.0	
	2008-2009	S-14	63.3	
	2008	S-15	120.3	Impacted by snowstorm in 2011
	2010-2011	S-16	120.1	
Maple	2006-2007	S-17	30.9	
	2008	S-18	58.5	
Oak	2008-2009	S-19	26.8	Tree growth not measurable
Pine+Maple+oak irregular	2006	S-20	25.7	
	2008	S-21	83.5	
Pine+Fir irregular	2008	S-22	51.0	Tree growth not measurable
Total			**3008.8**	

Note: Tree growth not measured on strata with sample plots with trees that have tree diameters below minimum measurable threshold either due to delayed planting or due to poor growth rates on low productive sites.

5. Sampling scheme

Permanent sampling plots were used for sampling over time to measure and monitor changes in carbon stocks of the relevant carbon pools. The plots were located with GPS and are invisible so as to be treated in the same way as other lands within the project boundary, e.g., during fertilization, tending, thinning, harvesting, etc.

- **Determining sample size**

A/R Methodological Tool "Calculation of the number of sample plots for measurements within A/R CDM project activities" (Version 02.1.0) was applied to re-calculate the number of sample plots for each stratum outlined in the PDD.

$$n = \frac{N \cdot t_{VAL}^2 \cdot (\sum_i w_i \cdot s_i)^2}{N \cdot E^2 + t_{VAL}^2 \cdot \sum_i w_i \cdot s_i^2} \quad \text{(B.1)}$$

$$n_i = n \cdot \frac{w_i \cdot s_i}{\sum_i w_i \cdot s_i} \quad \text{(B.2)}$$

Where

n	Number of sample plots required for estimation of biomass stocks within the project boundary, dimensionless
n_i	Number of sample plots allocated to stratum i for estimation of biomass stocks within the project boundary, dimensionless
t_{VAL}	Two-sided Student's t-value, at infinite degrees of freedom, for the required confidence level; dimensionless
N	Total number of possible sample plots within the project boundary (i.e. the sampling space or the population); dimensionless
w_i	Relative weight of the area of stratum i (i.e. the area of the stratum i divided by the project area); dimensionless
s_i	Estimated standard deviation of biomass stock in stratum i; t d.m. ha^{-1}
E	Acceptable margin of error (i.e. one-half the confidence interval) in estimation of biomass stock within the project boundary; t d.m. ha^{-1}

The standard deviation of biomass stock for each stratum (s_i) was determined based on preliminary measurement in early 2010. For stratum without preliminary measurement, 30% of relative standard deviation was assumed. The t_{VAL} was determined based on the 90% confidence level. A default value equal to 10% of the mean biomass stock was used as the acceptable margin of error. The mean biomass stock is the expected biomass at the time of monitoring, which can be estimated as part of the ex-ante estimation of the actual net GHG removals by sinks.

For the purposes of statistics, if calculated n_i<3, then n_i=3. Furthermore, to ensure that 10% of the precision level can be achieved, the number of sample plots was increased by 25% in addition to the requiredsize. The sample plots were allocated to each stratum based on size of each stratum relative to the total project area. The number of sampling plots used for monitoring and measurement are listed in table C.2 below.

Table C.2 number of sampling plots

Stratum ID	Area (ha)	Number of sampling plots
S-1	369.4	**7**
S-2	236.2	5
S-3	122.9	4
S-4	417.4	7
S-5	165.3	4
S-6	153.6	4
S-7	37.8	3
S-8	94.4	4
S-9	16.1	3
S-10	152.6	4
S-11	119.6	4
S-12	25.4	3
S-13	518.0	19
S-14	63.3	3
S-15	120.3	6
S-16	120.1	4
S-17	30.9	3
S-18	58.5	3
S-19	26.8	3
S-20	25.7	3
S-21	83.5	3
S-22	51.0	3
total	**3008.8**	**102**

- **Locating sampling plots**

To avoid subjective choice of plot locations (plot centres, plot reference points, movement of plot centres to more "convenient" positions) and to ensure that the sampling plots evenly spread in each stratum as much as possible, the permanent sample plots were laid out systematically with a random start. This was achieved by procedures below:

Step 1: 100 m × 100 m grids was created on ArcGIS platform and overlapped on the project area. The number of cross points (potential plot center) was counted for each stratum. A series number starting at 1 was assigned to each cross point in a stratum.

Step 2: A random number was produced using function "ROUND (RAND()*(N),0) in excel spread, where N is the total number of cross points in the stratum. The cross point in series number that corresponds to the random number was assigned as the center of the first sampling plot in a stratum.

Step 3: Starting at the first plot and moving along the cross points following a fixed direction of west-east-south-north, one sample plot was assigned for a fixed interval of cross points. The interval is dependent on the total number of cross points and the number of sample plots in a stratum. Lay out of the sample plots are shown in the figure below with the example of sample plot lay out in stratum 13 located in Cangwu County .

The size of sample plots is 400 m^2 (20m × 20m). However, if the shortest distance between sampling plot boundary and project boundary is less than 10 m, or if the plot is across the project or stratum boundary, the sample plot shall be moved toward the center of the parcel of land. The geographical coordinates of all sample plots were listed in table C.3 below.

As per the monitoring procedures, if after the field measurement, the precision level is over 10%, the number of sample plots would need to be recalculated using above mentioned method, based on measured standard deviation of biomass stock to layout the additional sampling plots.

Distribution of sampling plots for stratum 13 in Cangwu County

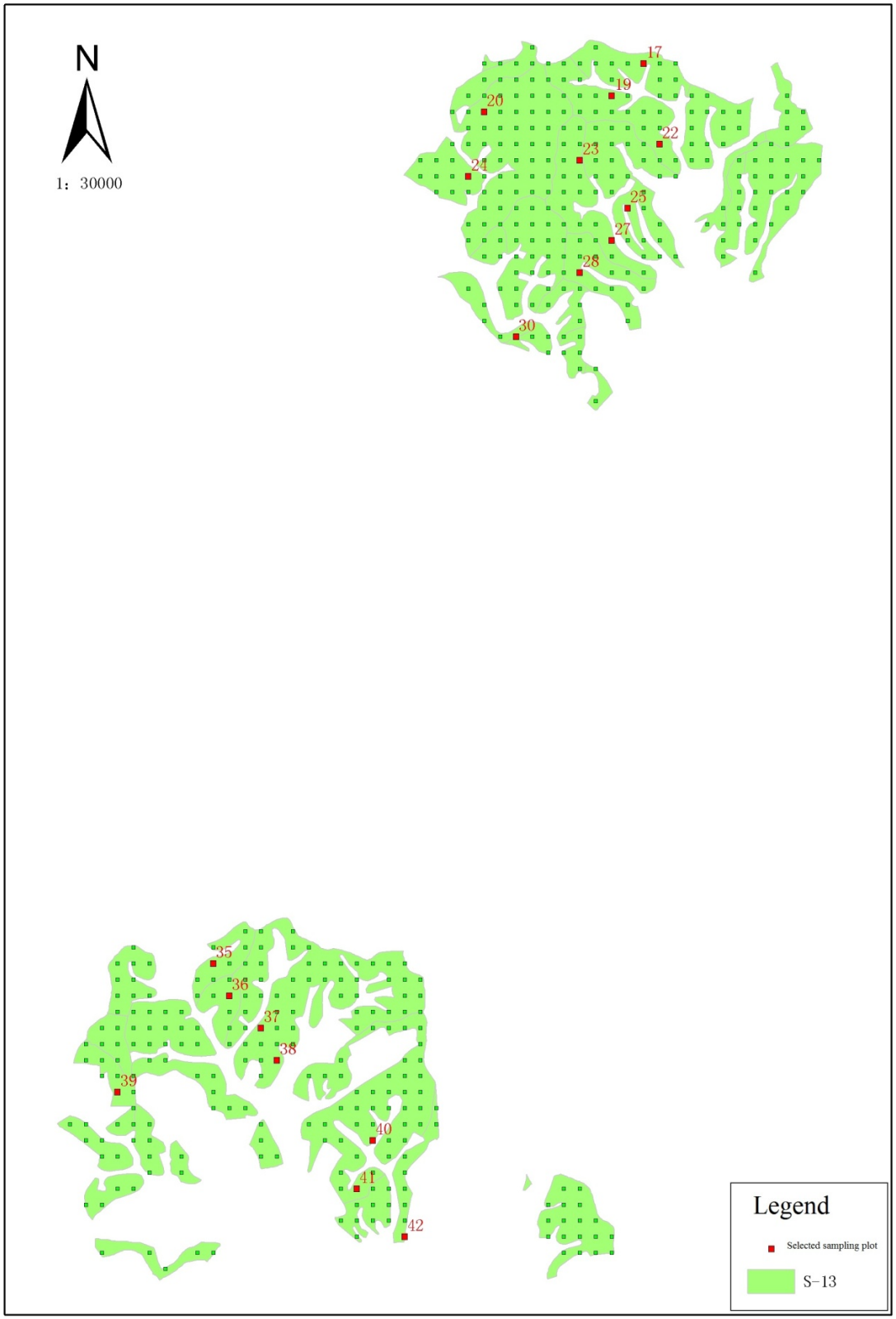


Table C.3 GPS coordinates of sampling plots

Strata ID	Plot ID	Coordinates[1]		Strata ID	Plot ID	Coordinates[1]	
		Longitude	Latitude			Longitude	Latitude
S-1	C2	111.5451	24.1466	S-13	H40	108.1588	25.2175
S-1	C3	111.5402	24.1423	S-13	C17	111.1791	23.3576
S-1	C5*	111.4968	24.1307	S-13	C19	111.1770	23.3558
S-1	C6	111.5065	24.0955	S-13	C20	111.1692	23.3549
S-1	C9	111.5457	24.0674	S-13	C22	111.1800	23.3530
S-1	C16	111.1654	23.3594	S-13	C23	111.1750	23.3521
S-1	C43	111.3157	23.2291	S-13	C24	111.1682	23.3513
S-2	C11*	111.3912	24.0145	S-13	C25	111.1781	23.3495
S-2	C13*	111.3980	24.0019	S-13	C27	111.1770	23.3477
S-2	C31*	111.1936	23.3413	S-13	C28	111.1750	23.3459
S-2	C34*	111.1633	23.3089	S-13	C30	111.1710	23.3423
S-2	C44*	111.2804	23.2229	S-13	C35	111.1526	23.3070
S-3	C21*	111.1907	23.3540	S-13	C36	111.1535	23.3052
S-3	C29*	111.1936	23.3450	S-13	C37	111.1555	23.3035
S-3	C45*	111.2823	23.1931	S-13	C38	111.1565	23.3017
S-3	C48*	111.1777	23.1689	S-13	C39	111.1466	23.2999
S-4	H10	108.3956	25.4309	S-13	C40	111.1623	23.2973
S-4	H12*	108.5603	25.3483	S-13	C41	111.1613	23.2944
S-4	H13*	108.5553	25.3429	S-13	C42	111.1641	23.2917
S-4	H15	108.3665	25.3362	S-14	H28	108.3684	25.3029
S-4	H17	108.3655	25.3318	S-14	H34	108.3634	25.2929
S-4	H22*	108.5492	25.3131	S-14	H37	108.1461	25.2518
S-4	H52*	108.0218	25.0984	S-15	H31	108.3644	25.3001
S-5	H1*	108.3620	25.4852	S-15	H36	108.3544	25.2867
S-5	H2*	108.3600	25.4798	S-15	H38	108.1638	25.2517
S-5	H5*	108.3610	25.4743	S-15	H47	108.3938	25.1646
S-5	H14*	108.5811	25.3410	S-15	C14	111.2710	23.3990
S-6	H21*	108.5512	25.3149	S-15	H53	108.3525	25.2867
S-6	H24*	108.5501	25.3077	S-16	H44	108.3849	25.1710
S-6	H39*	108.1509	25.2472	S-16	H45	108.0773	25.1651
S-6	H48*	108.3858	25.1611	S-16	H46	108.0732	25.1642
S-7	H9	108.4603	25.4371	S-16	H49	108.0705	25.1580
S-7	H30*	108.5114	25.3006	S-17	H33	108.5075	25.2961
S-7	H35*	108.5094	25.2925	S-17	H41	108.1548	25.1767
S-8	H6	108.3732	25.4707	S-17	H42	108.1538	25.1751
S-8	H18	108.5712	25.3265	S-18	H3*	108.3580	25.4789
S-8	H19*	108.5641	25.3221	S-18	H11	108.4063	25.3614
S-8	H26*	108.5402	25.3041	S-18	H16*	108.3625	25.3326
S-9	H27*	108.5372	25.3032	S-19	C15*	111.2671	23.3936
S-9	H29*	108.5372	25.3014	S-19	C33*	111.1545	23.3134
S-9	H32*	108.5104	25.2997	S-19	C49*	111.1758	23.1680
S-10	C1*	111.5382	24.1468	S-20	H43	108.1505	25.1729
S-10	C4*	111.5352	24.1387	S-20	H50	108.0228	25.1011

S-10	C7*	111.5085	24.0954	S-20	H51	108.0245	25.0994
S-10	C10*	111.5418	24.0646	S-21	H4*	108.3719	25.4770
S-11	C8*	111.5536	24.0772	S-21	H7*	108.4553	25.4443
S-11	C12*	111.3961	24.0064	S-21	H8	108.4503	25.4389
S-11	C32*	111.1946	23.3413	S-22	H20*	108.5562	25.3176
S-11	C46*	111.2823	23.1922	S-22	H23*	108.5541	25.3095
S-12	C18*	111.1917	23.3567	S-22	H25*	108.5531	25.3068
S-12	C26*	111.1946	23.3495				
S-12	C47*	111.1758	23.1725				

Notes: "*" indicates that the sample plot was not measurable and its carbon stock is assumed to be zero at the time of the monitor event. The coordinates are based on Beijing 1954 3 degree zone and Gauss-kruger projection.

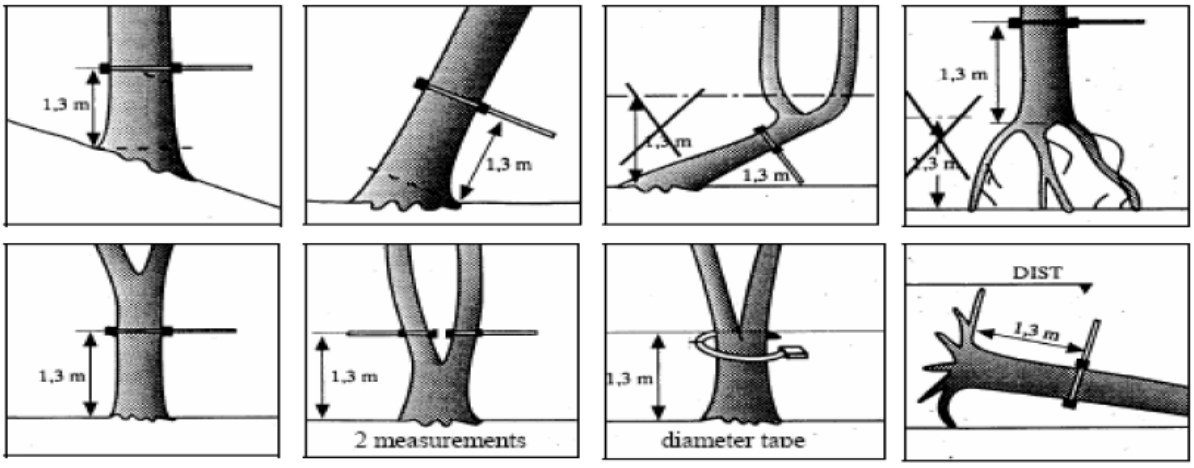
- **Field measurements**

The field measurements are accomplished using the GPS to identify the geographical position (GPS coordinates) of sample plots and their location and stratum information are recorded and archived.

After the four corners of sample plots were located, a permanent marker (a PVC pipe with 5cm in diameter and 30cm in length) was put at the center and four corners of the sample plot (placed vertically up to 20 cm deep in soil and 10 cm above soil surface), to enable the location of the sample plot at the future monitoring events.

The minimum diameter at breast height (DBH) measured is 2.0 cm. The DBH of many young trees especially those planted with delay have not reached the threshold. If over 2/3 of trees in a sampling plot have DBH less than 2.0 cm, then the plot was not measured and its carbon stock in living biomass was assumed to be zero.

DBH and height of each tree with DBH equal or over 2.0cm in all sample plots were measured. DBH was measured at 1.3 m above the ground in the manner as shown in figure below. After measuring the DBH of trees, their respective height measurements were conducted . The measured DBH and height were recorded on the field form (Annex III).



6. Measurement of pre-project shrub biomass

Destructive method has been used to measure the pre-project shrub biomass in the summer 2006. 110 random sampling plots were measured (table B.5 below). The size of plot for measuring shrub biomass ranged from 1 m² (1m X 1m) to 4 m² (2 m X 2 m), depending on the size, density and shape of shrubs. A frame of sample plot dimension was set at the defined locations. All shrub biomass inside the frame was collected in the tarpaulin or a weighting bag and weighed using a scale. The weight was recorded on the corresponding form. If the weighting scale is not enough for weigh the biomass in one single step. The total weight was calculated at the end of multiple measurements. A subsample of 100 to 250g of fresh biomass was collected to determine fresh weight to biomass ratio, followed by calculating dry

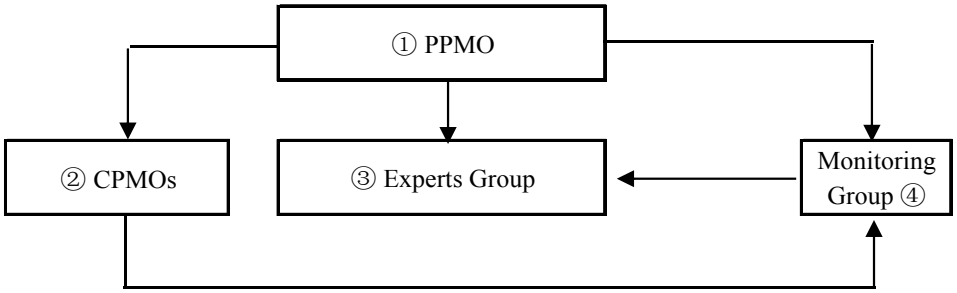
weight. The measured shrub biomass was used to calculate the biomass loss of pre-project shrub due to the project activity.

Table B.5 number of sample plot used for estimating pre-project shrub biomass

Ex ante baseline strata in PDD	Area in PDD (ha)	Area within the project boundary	Number of sampling plot
I	673.0	298.5	15
II	35.0	35.0	10
III	1,292.0	931.2	30
IV	500.0	455.3	10
V	450.0	234.1	10
VI	968.1	724.3	20
VII	81.9	47.3	15
Total	**4,000.0**	**3008.8**	**110**

7. Organizational structure, roles and responsibilities of personnel

The figure below shows the organizational structure with responsibilities for the management of the project.



Responsibility and roles

① Provincial Project Management Office (PPMO)

(1) Organization of project management works;
(2) Coordination the related participants;
(3) Communicating with World Bank Carbon Finance team and country representative staff;
(4) Supervising and facilitatation of project implementation;
(5) Organization training for CPMO, entities/farmer households;
(6) Review of monitoring schedule and annual monitoring reporting;
(7) Coordination of key technical and economic issues enountered during project implementation;
(8) Organization of monitoring and verification arrangements;
(9) Quality assurance for monitoring.

② County Project Management Office (CPMOs)

(1) Organization of project implementation on the sites located in the county;
(2) Supervising project implementation progress of the areas located in the county;
(3) Development and implementation of annual plan of operatoions;
(4) Supervision and facilitation of entities/farmer households to raise funds;
(5) Reporting of project implementation progress on the sites in the county;
(6) Organization of trainings for forest farms/farmer households participating in the project;
(7) Provision of technical guidance and supervision of project activities;
(8) Survival check of planted areas in the first three years;
(9) Organization of technical staff for field measurement;
(10) Archival and management of data at county level (including farmer groups);

(11) Coordinating of communication with the forest farms/companies and communities/households;
(12) Management of of the carbon revenue sharing among the farmers
(13) Coordination to resolve technical problems in project implementation.

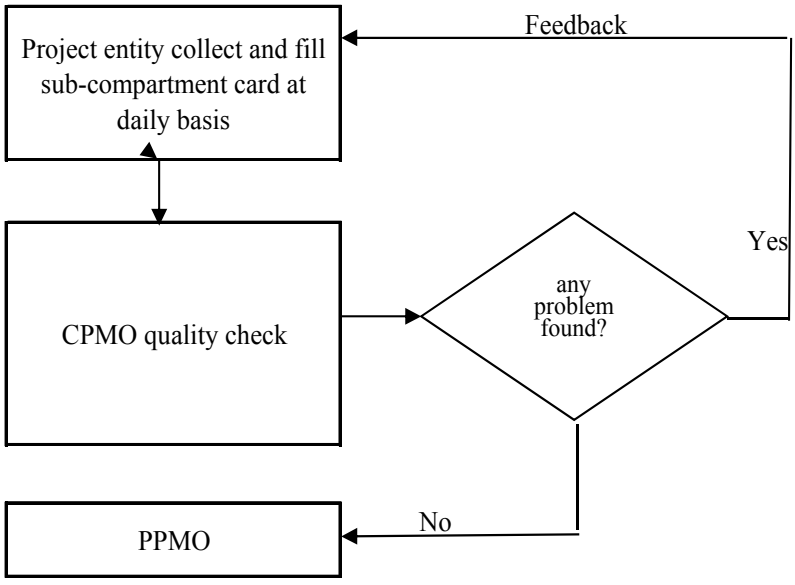
③ Experts Group

(1) Development of guidance manuals to support project monitoring and verification, standard operational guidelines for measuring forest growth, etc;
(2) Provision of technical training and consultation to the monitoring personnel;
(3) Checks of field data collected, e.g., data on survival rates of planted areas;
(4) Review of quality control and quality assurance procedures of field measurement;
(5) Preparation of monitoring report.

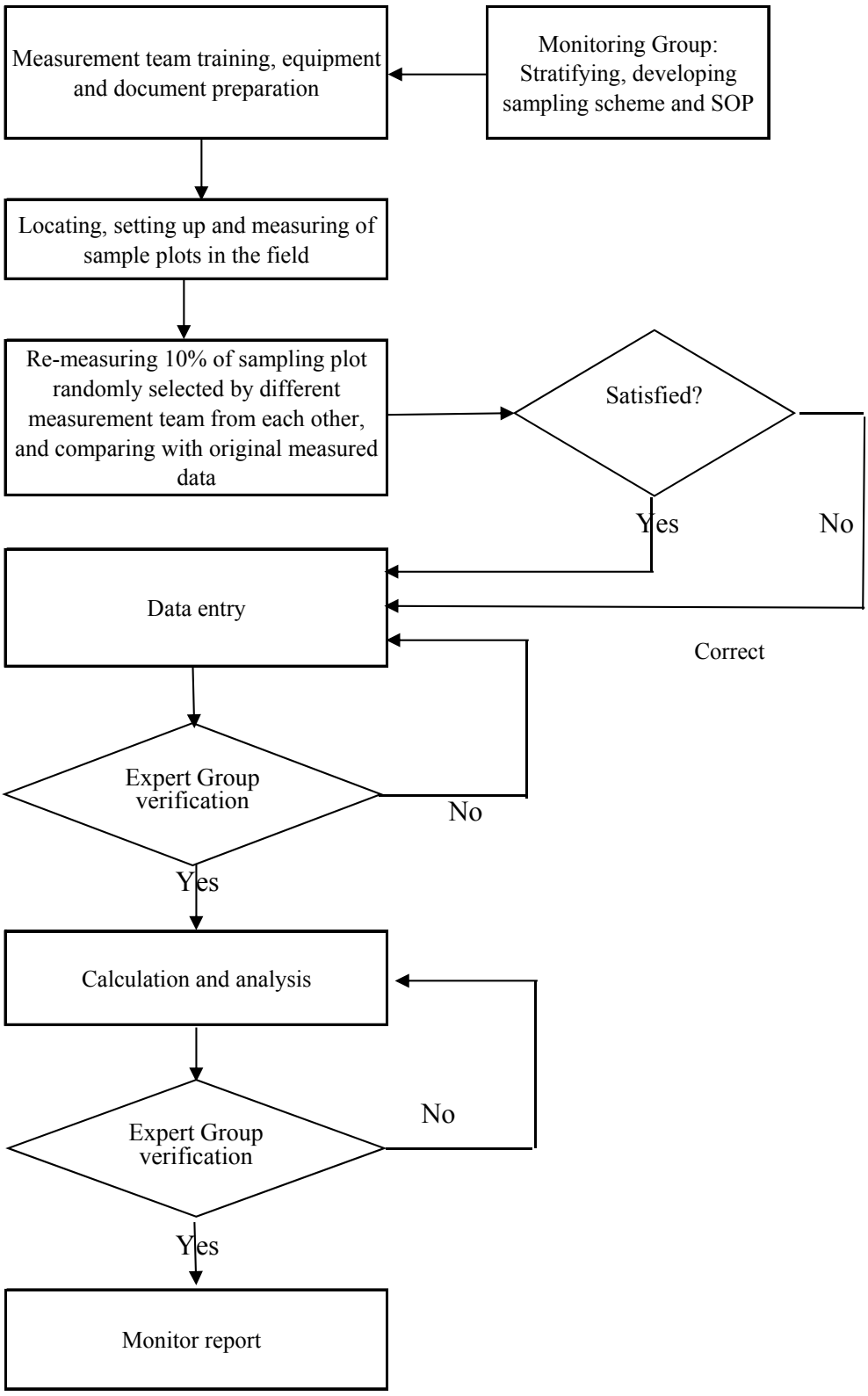
④ Monitoring Group

The monitoring group is composed of forestry experts and technicians from Guangxi Forestry Planning and Inventory Institute, and is responsible for:
(1) Periodical monitoring of project boundaries;
(2) Project stratification;
(3) Development and and implementation of the sampling scheme;
(4) Development of SOP for field measurement;
(5) Preliminary analysis of field measurement;
(6) Assistance to the expert group in the analysis of measured data;
(7) Assistance to expert group in the preparation of monitoring report;.

8. Flow chart for monitoring of project implementation



9. Flow chart for field measurement of sampling plots and data entry/analysis



10.QA/AC procedures

Quality assurance and quality control (QA/QC) procedures are implemented to ensure the net anthropogenic GHG removals by sinks are measured and monitored precisely, credibly, and transparently.

a) Quality checks on field measurements

To ensure the reliable field measurements,

- Standard Operating Procedures (SOPs) followed for each step of the field measurements, including all phases of the field measurements enable collection of data for preparing monitoring report and supporting documentation for verification purposes.
- Training courses on the field data collection data entry, analysis and archival were held for persons involving in the field measurement work. The training courses were conducted to ensure that each field-team member is fully aware of all procedures and the importance of collecting data as accurately as possible.
- A document showing implementation of the QA/QC steps has been presented as part of the project documents. The document lists the names of the team leader and personnel involved in field level monitoring;

b) Quality checks of field data collected

To verify that the plots have been installed and the measurements taken correctly, the following measures have been undertaken:

- Re-measurement of at least one (randomly selected) plot per every 10 plots by another team, and comparison of the measurements to check for errors; any errors found are recorded, resolved and corrected.
- Key re-measurement elements include the location of plots, DBH and tree height of all trees present. The procedures implemented as part of the re-measurement are checking of the field record of both original measurement and re-measurement. If any calculation error is found, it is checked and corrected.

c) Quality checks of data entry and analysis

To minimize the possible errors in the process of data entry, the entry of field data was reviewed by expert group. Communication among personnel involved in measuring and analyzing data was used to resolve any anomalies in the monitoring data.

d) Data maintenance and archival

Data were archived in both electronic and paper forms, and copies of all data shared with each project participant. All electronic data and reports were copied on durable media such as CDs and copies of the CDs and stored in multiple locations. The archives include:

- Copies of all original field measurement data, laboratory data, data analysis spreadsheet;
- Estimates of the carbon stock changes in all pools and non-CO_2 GHG emissions covered by the project and corresponding calculation spreadsheets;
- GIS products;
- Copies of the measuring and monitoring reports.

SECTION D. Data and parameters

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors		
(Copy this table for each data and parameter. To report multiple values, a table may be used)		
Data / Parameter:	$BEF_{2,j}$	
Data unit:	Dimensionless	
Description:	Biomass expansion factor for conversion of stem biomass to above-ground biomass for tree species j	
Source of data used:	GHG inventory in LULUCF sector for national communication on GHG inventory	
Value(s) :	Tree species	$BEF_{2,j}$
	Pinus massoniana	1.46
	Cunninghamia lanceolata	1.53
	Eucalyptus sp.	1.48
	Quercus sp.	1.54
	Schima superba	1.79
	Liquidambar formosana	1.54
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario	
Additional comment:		

Data / Parameter:	D_j	
Data unit:	t d.m. m^{-3}	
Description:	Basic wood density for tree species *j*	
Source of data used:	GHG inventory in LULUCF sector for national communication on GHG inventory	
Value(s) :	Tree species	D_j
	Pinus massoniana	0.380
	Cunninghamia lanceolata	0.307
	Eucalyptus sp.	0.578
	Quercus sp.	0.676
	Schima superba	0.598
	Liquidambar formosana	0.443
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario	

Data / Parameter:	R_j	
Data unit:	Dimensionless	
Description:	Root-shoot ratio for tree species *j*	
Source of data used:	GHG inventory in LULUCF sector for national communication on GHG inventory	
Value(s) :	Tree species	R_j
	Pinus massoniana	0.283
	Cunninghamia lanceolata	0.255
	Eucalyptus sp.	0.201
	Quercus sp.	0.340
	Schima superba	0.217
	Liquidambar formosana	0.283
Indicate what the data are	Carbon stock in living biomass of trees under the project scenario	

used for (Baseline/ Project/ Leakage emission calculations)	

Data / Parameter:	$V_{TREE,j,p,i,t}$
Data unit:	m^3/tree
Description:	Stem volume of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*, estimated by using the tree dimension(s) as entry data into a volume table or volume equation
Source of data used:	Guangxi forest inventory manual or yield table, which are appropriate based on A/R Methodological Tool "Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities" (Version 01.0.0)
Value(s) :	Tree species $V_{TREE,j,p,i,t}$
	P. massoniana $V = 0.0000714265437 \cdot DBH^{1.867010} \cdot H^{0.9014632}$
	C.lanceolata $V = 0.000065671 \cdot DBH^{1.769412} \cdot H^{1.069769}$
	Eucalyptus sp. $V = 0.000109154145 \cdot DBH^{(C_1 - C_2 \cdot (DBH+H))} \cdot H^{(C_3 + C_4 \cdot (DBH+H))}$
	Other broadleaf species $V = 0.0000667054 \cdot DBH^{1.8479545} \cdot H^{0.96657509}$
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario.

D.2. Data and parameters monitored	
(Copy this table for each data and parameter. To report multiple values, a table may be used)	
Data / Parameter:	$A_{p,i}$
Data unit:	**ha**
Description:	Area of sample *p* in stratum *i*
Measured /Calculated /Default:	Measured
Source of data:	Field measurement
Value(s) of monitored parameter:	0.04 ha
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- GPS+ PDA: Holux GPS GR－230XX + HP IPAQ hx2000, accuracy 1-5 m, calibration before field measurement, last calibration on December 15 2011 - Compass: DQL-16Z, accuracy 5', calibration before field measurement, last calibration on December 15 2011, accuracy met; - metric tape, PVC pipe/rod, calculator, field map
Measuring/ Reading/ Recording frequency:	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied:	Manual/guidelines for national and local forest inventory and Manual

	for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.10 above)

Data / Parameter:	A_i
Data unit:	**ha**
Description:	Area of stratum *i*
Measured /Calculated /Default:	Measured
Source of data:	Field measurement
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- GPS + PDA: Holux GPS GR－230XX + HP IPAQ hx2000, accuracy 1-5 m, calibration before field measurement, last calibration on December 15 2011 - ArcGIS 9.3
Measuring/ Reading/ Recording frequency:	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied:	Manual/guidelines for national and local forest inventory and Manual for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.10 above)

Data / Parameter:	*DBH*
Data unit:	**cm**
Description:	the diameter at breast height of the tree (1.3 m)
Measured /Calculated /Default:	measured
Source of data:	Field measurement
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Vinyl tape, wooden stake
Measuring/ Reading/ Recording frequency:	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied:	Manual/guidelines for national and local forest inventory and Manual

	for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.10 above)

Data / Parameter:	*H*
Data unit:	**m**
Description:	Height of tree
Measured /Calculated /Default:	measured
Source of data:	Field measurement
Value(s) of monitored parameter:	
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Carbon stock in living biomass of trees under the project scenario
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	- Hypsometer CGQ-1: accuracy 1%, , calibration before field measurement, last calibration on December 15 2011, accuracy met. - metric tape
Measuring/ Reading/ Recording frequency:	Every five years since the year of the initial verification
Calculation method (if applicable):	
QA/QC procedures applied:	Manual/guidelines for national and local forest inventory and Manual for Monitoring of CDM Afforestation and Reforestation Projects: Part I - Standard Operational Procedures by World Bank (also section C.10 above)

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

>>

The baseline net removals by sinks were fixed as the ex ante estimation. The total of the baseline net removals by sinks during the monitoring period (from the project start to the end of 2011) were 58.9 tCO_2 (Table E-1).

Table E-1 Baseline net GHG removals by sinks

Year No.	Years	Baseline net GHG removals by sinks (t CO_2 yr^{-1})	Cumulative Baseline net GHG removals by sinks (t CO_2)
1	2006	7.8	7.8
2	2007	8.7	16.5
3	2008	9.5	25.9
4	2009	10.2	36.2
5	2010	11.0	47.2
6	2011	11.7	58.9
Total of the monitoring period		58.9	

E.2. Project emissions calculation

>>

The actual net GHG removals by sinks were estimated using the BEF method contained in the approved methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (Version 02.1.0), as described below.

1. ***Estimation of biomass stock in trees***

(1) Volume equations (listed in Section D.1) were used to convert measured DBH and height to stem volume of trees for each tree with sampling plot.

(2) Stem volume of each tree in sample plot was converted to above-ground tree biomass using basic wood density and biomass expansion factors, and the above-ground tree biomass was expanded to total tree biomass using root-shoot ratios. Thus, biomass of trees of species *j* in sample plot *p* is estimated as:

$$B_{TREE,j,p,i,t} = V_{TREE,j,p,i,t} * D_j * BEF_{2,j} * (1 + R_j) \quad \textbf{(E.1)}$$

where:

$B_{TREE,j,p,i,t}$	Biomass of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*; t d.m.
$V_{TREE,j,p,i,t}$	Stem volume of trees of species *j* in sample plot *p* of stratum *i* at a point of time in year *t*, estimated by using the measured DBH and height as entry data into a volume equation; m^3
D_j	Basic wood density of tree species *j* (listed in Section D.1); t d.m. m^{-3}
$BEF_{2,j}$	Biomass expansion factor for conversion of stem biomass to above-ground tree biomass, for tree species *j* (listed in Section D.1); dimensionless
R_j	Root-shoot ratio for tree species *j* (listed in Section D.1); dimensionless
j	*1, 2, 3, …* tree species in plot *p*
p	*1, 2, 3, …* sample plots in stratum *i*
i	*1, 2, 3, …* tree biomass estimation strata within the project boundary
t	*1, 2, 3, ...* years counted from the start of the A/R CDM project activity

(3) Tree biomass in sample plot *p* of stratum *i* was estimated as follows:

$$B_{TREE,p,i,t} = \sum_j B_{TREE,j,p,i,t} \quad \textbf{(E.2)}$$

where:

$B_{TREE,p,i,t}$	Tree biomass in sample plot *p* in stratum *i* at a given point of time in year *t*; t d.m.
$B_{TREE,j,p,i,t}$	Biomass of trees of species *j* in sample plot *p* of stratum *i* at a given point of time in year *t*; t d.m.
j	*1, 2, 3, …* species in plot *p*
p	*1, 2, 3, …* sample plots in stratum *i*
i	*1, 2, 3, …* strata used for tree biomass estimation within the project boundary
t	*1, 2, 3, ...* years counted from the start of the A/R CDM project activity

(4) Tree biomass per hectare in plot *p* in stratum *i* was estimated as follows:

$$b_{TREE,p,i,t} = \frac{B_{TREE,p,i,t}}{A_{p,i}} \quad \textbf{(E.3)}$$

where:

$b_{TREE,p,i,t}$	Tree biomass per hectare in sample plot *p* in stratum *i* at a given point of time in year *t*; t d.m. ha^{-1}
$B_{TREE,p,i,t}$	Tree biomass in sample plot *p* in stratum *i* at a given point of time in year *t*; t d.m.
$A_{p,i}$	Area of sample plot *p* in stratum *i*; ha
p	*1, 2, 3*, … sample plots in stratum *i*
i	*1, 2, 3,* … tree biomass estimation strata within the project boundary
t	*1, 2, 3,* ... years counted from the start of the A/R CDM project activity

(5) Mean tree biomass per hectare in stratum *i* and the variance of tree biomass per hectare in the stratum were estimated as follows:

$$b_{TREE,i,t} = \frac{\sum_{p=1}^{n_i} b_{TREE,p,i,t}}{n_i} \quad \textbf{(E.4)}$$

$$s_i^2 = \frac{n_i * \sum_{p=1}^{n_i} b_{TREE,p,i,t}^2 - \left(\sum_{p=1}^{n_i} b_{TREE,p,i,t} \right)^2}{n_i * (n_i - 1)} \quad \textbf{(E.5)}$$

where:

$b_{TREE,i,t}$	Mean tree biomass per hectare in stratum *i* at a given point of time in year *t*; t d.m. ha^{-1}
$b_{TREE,p,i,t}$	Tree biomass per hectare in sample plot *p* in stratum *i* at a given point of time in year *t*; t d.m. ha^{-1}
n_i	Number of sample plots in stratum *i*
s_i^2	Variance of tree biomass per hectare in stratum *i* at a given point of time in year *t*; (t d.m. ha^{-1})^2

(6) Mean tree biomass per hectare within the project boundary and its variance were estimated as follows:

$$b_{TREE,t} = \sum_{i=1}^{M} w_i * b_{TREE,i,t} \quad \textbf{(E.6)}$$

$$s_{b_{TREE}}^2 = \sum_{i=1}^{M} w_i^2 * \frac{s_i^2}{n_i} \quad \textbf{(E.7)}$$

where:

$b_{TREE,t}$	Mean tree biomass per hectare within the project boundary at a given point of time in year *t*; t d.m. ha^{-1}
w_i	Ratio of the area of stratum *i* to the sum of areas of biomass estimation strata; dimensionless

$b_{TREE,i,t}$ Mean tree biomass per hectare in stratum *i* at a given point of time in year *t*; t d.m. ha^{-1}

$s^2_{b_{TREE}}$ Variance of mean tree biomass per hectare within the project boundary at a given point of time in year *t*; $(t\ d.m.\ ha^{-1})^2$

s_i^2 Variance of tree biomass per hectare in stratum *i* at a given point of time in year *t*; $(t\ d.m.\ ha^{-1})^2$

n_i Number of sample plots in stratum *i*

M Number of tree biomass estimation strata within the project boundary

(7) Margin of error of the mean tree biomass per hectare within the project boundary was estimated as:

$$e_{b_{TREE}} = t_{VAL} * s_{b_{TREE}} \quad \textbf{(E.8)}$$

where:

$e_{b_{TREE}}$ Margin of error of the mean tree biomass per hectare within the project boundary; t d.m. ha^{-1}

t_{VAL} Two-sided Student's *t*-value for: (i) Degrees of freedom equal to $n - M$, where n is total number of sample plots within the project boundary, and M is the total number of tree biomass estimation strata; and (ii) The confidence level required by the methodology applying this tool (e.g. 90% or 95%); dimensionless.

E.g. Two-sided Student's *t*-value for a probability value of 10% (which implies a 90% confidence level) and 79 degrees of freedom can be obtained in Excel spreadsheet as "=TINV(0.10,79)" which returns a value of 1.664371

$s_{b_{TREE}}$ Square root of the variance of mean tree biomass per hectare within project boundary at a given point of time in year *t* (i.e. the standard error of the mean); t d.m. ha^{-1}

(8) Total tree biomass within the project boundary at a given point of time in year *t* was estimated as follows:

$$B_{TREE,t} = A * b_{TREE,t} \quad \textbf{(E.9)}$$

where:

$B_{TREE,t}$ Total tree biomass within the project boundary at a given point of time in year *t*; t d.m.

A Sum of areas of the biomass estimation strata within the project boundary; ha

$b_{TREE,t}$ Mean tree biomass per hectare within the project boundary at a given point of time in year *t*; t d.m. ha^{-1}

(9) Carbon stock in tree biomass within the project boundary at a given point of time in year *t* was estimated as follows:

$$C_{TREE,t} = \frac{44}{12} * B_{TREE,t} * CF_{TREE} \quad \textbf{(E.10)}$$

where:

$C_{TREE,t}$ Carbon stock in tree biomass within the project boundary at a given point of time in year *t*; t CO_2-e

$B_{TREE,t}$ Total tree biomass within the project boundary at a given point of time in year *t*; t d.m.

CF_{TREE} Carbon fraction of tree biomass; t C t $d.m.^{-1}$

A default value of 0.50 is used unless transparent and verifiable information can

be provided to justify a different value

Table E-2 carbon stock in project trees

Strata	mean tree biomass $b_{TREE,i,t}$ (t d.m./ha)	Strata area (ha)	Variance of tree biomass (t d.m. ha^{-1})^2	Carbon stock in tree biomass and the margin of error
S−1	4.25	369.4	9.93	$b_{TREE,t}$=25.2008 t d.m. ha^{-1}
S−2	0.00	236.2	0.00	$B_{TREE,t}$=75,824.05 t d.m.
S−3	0.00	122.9	0.00	$C_{TREE,t}$=139,010.8 tCO_2-e
S−4	0.67	417.4	0.79	
S−5	0.00	165.3	0.00	$s_{b_{TREE}}$=1.4916249 t d.m. ha^{-1}
S−6	0.00	153.6	0.00	$e_{b_{TREE}}$=2.48225 t d.m. ha^{-1}
S−7	7.79	37.8	182.13	$e_{b_{TREE}} / b_{TREE,t} \times 100\% = 9.85\%$
S−8	4.22	94.4	25.49	
S−9	0.00	16.1	0.00	
S−10	0.00	152.6	0.00	
S−11	0.00	119.6	0.00	
S−12	0.00	25.4	0.00	
S−13	122.42	518.0	1372.08	
S−14	77.74	63.3	1.48	
S−15	30.12	120.3	153.81	
S−16	6.45	120.1	7.52	
S−17	3.11	30.9	6.39	
S−18	0.31	58.5	0.29	
S−19	0.00	26.8	0.00	
S−20	14.53	25.7	9.44	
S−21	0.73	83.5	1.61	
S−22	0.00	51.0	0.00	
TOTAL		**3008.8**		

2. ***Carbon stock changes in living tree biomass of the project***

The rate of change of tree biomass over a period of time was calculated assuming a linear growth. Therefore, the rate of change in carbon stock in tree biomass over a period of time was calculated as follows:

$$dC_{TREE,(t_1,t_2)} = \frac{C_{TREE,t_2} - C_{TREE,t_1}}{T} \quad \textbf{(E.11)}$$

where:

$dC_{TREE,(t_1,t_2)}$	Rate of change in carbon stock in tree biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}
C_{TREE,t_2}	Carbon stock in tree biomass within the project boundary at a point of time in year t_2; t CO_2-e
C_{TREE,t_1}	Carbon stock in tree biomass within the project boundary at a point of time in year t_1; t CO_2-e
T	Time elapsed between two successive estimations (T=t_2 – t_1); yr

For the first verification, the variable C_{TREE,t_1} in Equation (E.11) was assigned the value of carbon stock in the pre-project tree biomass at the start of the A/R CDM project activity, which is estimated as 25.8 tCO_2 as a medium result for estimating carbon stock changes in pre-project living trees during the ex ante estimate of baseline net GHG removal by sinks.

Change in carbon stock in tree biomass within the project boundary in year t ($t_1 \le t \le t_2$) is calculated as follows:

$$\Delta C_{TREE,t} = dC_{TREE,(t_1,t_2)} * 1year \text{ for } t_1 \le t \le t_2 \quad \textbf{(E.12)}$$

=(139,010.8-25.8)/5.75 = 24,171.3 t CO_2-e

where:

$\Delta C_{TREE,t}$	Change in carbon stock in tree biomass within the project boundary in year t; t CO_2-e
$dC_{TREE,(t_1,t_2)}$	Rate of change in carbon stock in tree biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}

3. ***Carbon stock changes in shrub biomass***

The rate of change of shrub biomass over a period of time is estimated as follows:

$$dC_{SHRUB,(t_1,t_2)} = \frac{C_{SHRUB,t_2} - C_{SHRUB,t_1}}{T} \quad \textbf{(E.13)}$$

where:

$dC_{SHRUB,(t_1,t_2)}$	Rate of change in carbon stock in shrub biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}
C_{SHRUB,t_2}	Carbon stock in shrub biomass within the project boundary at a point of time in year t_2; t CO_2-e
C_{SHRUB,t_1}	Carbon stock in shrub biomass within the project boundary at a point of time in year t_1; t CO_2-e
T	Time elapsed between two successive estimations (T=$t_2 - t_1$); yr

For the first verification, the variable C_{SHRUB,t_1} in Equation (E.13) was assigned the value of carbon stock in the shrub biomass at the start of the A/R CDM project activity (Table E-3 below which was measured using method described in Section C.6 above), that is: $C_{SHRUB,t_1} = C_{SHRUB\_BSL}$ for the first verification, where t_1 = 1 and t_2 = year of first verification. It was conservatively assumed that all pre-project shrub biomass was died out and emitted at the time of planting, that is: $C_{SHRUB,t_2} = 0$.

Table E-3 carbon stock in shrub at the start of the project

Baseline strata	No of sampling plots	Mean shrub biomass (t d.m.ha^{-1})	Area (ha)	biomass (t d.m.)	Carbon stock (tCO_2)
I	15	1.837	298.5	1068.4	1958.8
II	10	3.791	35.0	132.7	243.2
III	30	2.182	931.2	2031.4	3724.3
IV	10	0.316	455.3	143.9	263.9
V	10	0.604	234.1	141.5	259.4
VI	20	0.360	724.3	260.5	477.6

VII	15	0.400	47.3	18.9	34.7
	110	1.837	**3008.8**	**3797.4**	**6962.0**

Change in carbon stock in shrub biomass within the project boundary in year t ($t_1 \le t \le t_2$) was calculated as follows:

$$\Delta C_{SHRUB,t} = dC_{SHRUB,(t_1,t_2)} * 1year \quad \text{for } t_1 \le t \le t_2 \qquad \textbf{(E.14)}$$

$$= \textbf{(0 – 6962.0)/5.75 = -1,210.8} \text{ t } CO_2\text{-e yr}^{-1}$$

where:

$\Delta C_{SHRUB,t}$	Change in carbon stock in shrub biomass within the project boundary in year t; t CO_2-e
$dC_{SHRUB,(t_1,t_2)}$	Rate of change in carbon stock in shrub biomass within the project boundary during the period between a point of time in year t_1 and a point of time in year t_2; t CO_2-e yr^{-1}

4. ***Project emissions***

There has been no biomass burning during site preparation and no forest fire during the verification period. The nitrogen fertilizer was applied in eucalyptus plantation, however relevant nitrogen oxide emissions may be neglected based on the guidance provided in para 35, EB 42 meeting report regarding accounting of GHG emissions in A/R CDM project activities, and the guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities (Version 01.0). Therefore the project GHG emissions were set as zero.

5. ***Actual net GHG removals by sinks***

The actual net GHG removals by sinks were calculated as:

$$\Delta C_{ACTUAL} = \Delta C_P - GHG_E \qquad \textbf{(E.15)}$$

where:

ΔC_{ACTUAL}	Actual net GHG removals by sinks; t CO_2-e
ΔC_P	Sum of the changes the carbon stock in the selected carbon pools within the project boundary; t CO_2-e
GHG_E	Increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity; t CO_2-e

The verifiable changes in the carbon stock in the selected carbon pools within the project boundary are estimated using the following equation:

$$\Delta C_P = \sum_{t=1}^{t^*} \Delta C_t \qquad \textbf{(E.16)}$$

where:

ΔC_P	Sum of the changes in carbon stock in all selected carbon pools, since the start of the project; t CO_2-e
ΔC_t	Change in carbon stock in all selected carbon pools, in year t; t CO_2-e
t	*1, 2, 3, ...* t^* years elapsed since the start of the A/R project activity; yr

Change in carbon stock in all selected carbon pools, in year t, is calculated as:

$$\Delta C_t = \Delta C_{TREE,t} + \Delta C_{SHRUB,t} \quad \textbf{(E.17)}$$

= 24,171.3 – 1,210.8 = 22,960.5 t CO_2-e

$$\Delta C_P = 22{,}9960.5 * 5.75 = 132{,}022.9 \text{ t } CO_2\text{-e}$$

where:

ΔC_t	Change in carbon stock in all selected carbon pools in the project scenario, in year *t*; t CO_2-e
$\Delta C_{TREE\_PROJ,t}$	Change in carbon stock in tree biomass in project, in year *t*; t CO_2-e
$\Delta C_{SHRUB\_PROJ,t}$	Change in carbon stock in shrub biomass in project, in year ; t CO_2-e
t	*1, 2, 3, ... t** years elapsed since the start of the A/R CDM project activity

E.3. Leakage calculation

>>

The potential leakage due to the implementation of the registered A/R CDM project activity is GHG emissions due to fossil fuel combustion from vehicles using for transporting seedling, labors, fertilizer, harvest products, etc., to and/or from project sites. However based on the guidance provided in para 35, EB 42 meeting report regarding accounting of GHG emissions in A/R CDM project activities, and the guidelines on application of specified versions of A/R CDM methodologies in verification of registered A/R CDM project activities (Version 01.0) (Annex 26, EB63), such emissions by sources were set as zero.

E.4. Emission reductions calculation / table

>>

The net anthropogenic GHG removals by sinks is the actual net GHG removals by sinks minus the baseline net GHG removals by sinks minus leakage, therefore, the following general formula was used to calculate the net anthropogenic GHG removals by sinks of an A/R CDM project activity (C_{AR-CDM}), in t CO_2-e.

$$C_{AR-CDM} = \Delta C_{ACTUAL} - \Delta C_{BSL} - LK \quad \textbf{(E.18)}$$

where:

C_{AR-CDM}	Net anthropogenic GHG removals by sinks; t CO_2-e
ΔC_{ACTUAL}	Actual net GHG removals by sinks; t CO_2-e
ΔC_{BSL}	Baseline net GHG removals by sinks; t CO_2-e
LK	Total GHG emissions due to leakage; t CO_2-e

Table **E-4 The net anthropogenic GHG removals by sinks**

Items	Value (tCO2 e)	Comments
1. Actual net GHG removals by sinks		
1.1 Carbon stock change in project trees	138,985.0	Measured
1.2 Carbon stock change in project shrub	-6,962.0	Measured

1.3 Project emissions	0	
2. Baseline net GHG removals by sinks	58.9	Ex ante estimate in PDD
3. **LK**	0	
4. Net anthropogenic GHG removals by sinks	131,964.1	

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

>>

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the monitoring period
Emission reductions by the end of 2011 (tCO_2e)	**262,981**	**131,964.1**

E.6. Remarks on difference from estimated value in the PDD

>>

The actual value of the net anthropogenic GHG removals by sinks is smaller than ex ante estimate in the registered CDM-PDD because of the reduction of actually planted area, delayed planting schedule and slow growth of species planted, as outlined below

1. Reduction of planted area

The actual planted area is 3008.8ha compared to the project area in the registered CDM-PDD (4,000 ha), amounted to 75.2% of planned area. Main causes for the reduction are (also summarized in table E.2 below):

- *Poor site conditions that prevented planting on 469.8 ha*: The high altitude, steep slopes, strong winds and rocky soils lacking adequate soil depth made site conditions of 469.8 ha unsuitable for reforestation. Even repeated replanting was not able to result in desired survival of planted seedlings. Considering the geography of the region, the poor site conditions could not be fully assessed at the project design stage. As a result of detailed assessment of site conditions during project implementation, the sites with poor site conditions were excluded from the project area.
- *Contract with households could not be implemented on 173.3 ha*: The contracts with farmers could not be implemented as the farmers' demands with regard to revenue sharing arrangements and permission to use access roads were outside the scope of the contract requiring additional investment. As a consequence, Xinghuan Forestry Development Co., Ltd was unable to comply with the requests from farmers and reforestation activity could not be implemented on 173.3 ha of lands proposed for reforestation.
- *Land tenure conflicts on 147.5 ha of lands*: From legal point of view, the land ownership is clear. However, as project lands are barren without revenue generation, the farmer households did not care about the tenure of the lands at the time of tenure settlement. During project preparation stage, farmers didn't foresee the legal disputes with regard to land tenure. With the implementation of the project, some farmers in the vicinity of the project lands claimed land tenure right on lands legally owned by other farmers. As a result of the disputes pertaining to land tenure, farmers that legally own the lands and the forestry companies that are implementing the project did not want to take the risk of planting trees on disputable lands.
- *Exclusion of area from the project*: some area was excluded from the project for the following reasons.
    - A parcel of 84.6 ha that was excluded from the project as it was proposed to be regenerated through natural regeneration.

- Strips of lands within 5-10 m from crop lands and the washed gully covering 78.5 ha: was not planted for the purpose of protecting crop lands.
- Land use changes occurred on 37.5 ha due to use of these lands for other purposes.

Table E-5 Summary table on area excluded from the designed project lands

No	Reason for exclusion	Area (ha)
a	Poor site condition	469.8
b	Failure in implementation of contract	173.3
c	Land tenure disputes	147.5
d	Human-assist natural regeneration	84.6
e	Leave for cropland protection	78.5
f	Land use changes	37.5
	Total	**991.2**

2. Delayed planting schedule

The actual planting progress was much slower than planned schedule (see table B.1 above for detail) due mainly to slow process for addressing land tenure conflict, unavailability of sufficient seedlings, poor site condition, and extreme climate event (snow storm in early 2008 and drought in 2009-2011). Many lands have been repeated planted due to low survival rate resulted from poor site conditions and extreme drought, and due to damage by snow storm and drought.

3. Lower growth rate

The growth rate of eucalyptus and part of Masson pine is comparable to what has estimated in PDD. However, oak, schima and maple grew much slower than expected, and 165.3 ha of pine planted in Huanjiang in 2008 had slow growth due to high elevation with strong winds.

- - - - -

History of the document

Version	**Date**	**Nature of revision**
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Guideline, Form **Business Function**: Issuance		

Annex I Planting schedule of the project lands

Towns/ township	Village	Land ID	Compart-ment	Sub-compart-ment	Area (ha)	Year planted	Species	Comments and/or plot ID	Baseline Strata	Project Strata
Cangwu County										
Dapo	Shengzhou	38	1	3.1	4.6	2007	Pine		III	S-1
		38	1	3.11	1.8	2009	Schima		III	S-11
		38	1	3.12	0.4	2009	Schima		III	S-11
		38	1	3.13	0.4	2009	Schima		III	S-11
		39	1	3.2	0.3	2008	Pine		III	S-2
		39	1	3.21	0.3	2009	Schima		III	S-11
		38	1	3.3	0.2	2009	Eucalyptus		III	S-15
		40	1	4	12.2	2007	Eucalyptus		III	S-13
		42	1	12	2.3	2009	Pine		III	S-3
		42	1	12.01	1.2	2009	Schima		III	S-11
		42	1	12.02	1.7	2009	Pine		III	S-3
		42	1	12.1	0.6	2009	Eucalyptus		III	S-15
		41	1	13.1	0.5	2008	Pine		III	S-2
		40	1	16.1	8.4	2007	Pine	C43	III	S-1
		40	1	16.11	0.5	2009	Schima		III	S-11
		40	1	16.12	1.5	2007	Pine		III	S-1
		40	1	16.13	0.1	2009	Schima		III	S-11
		40	1	16.14	0.3	2009	Schima		III	S-11
		40	1	17.1	1.2	2007	Pine		III	S-1
		40	1	17.2	1.6	2007	Eucalyptus		III	S-13
	Xinlong	43	2	20.1	2.6	2008	Pine		III	S-2
		43	2	20.11	0.1	2010	Pine		III	S-3
		43	2	26.1	1.8	2008	Pine		III	S-2
		43	2	26.11	0.5	2010	Pine		III	S-3
		43	3	3.2	4.6	2008	Pine		III	S-2
		43	3	3.21	2.3	2010	Pine		III	S-3
		45	3	7	3.4	2008	Pine		III	S-2
		45	3	7.01	0.5	2010	Pine		III	S-3
		45	3	7.02	0.4	2010	Pine		III	S-3
		44	3	8	5.7	2008	Pine		III	S-2
		44	3	8.01	3.3	2010	Pine		III	S-3
		44	3	9.1	6.1	2008	Pine	C44	III	S-2
		44	3	9.11	1.5	2010	Pine		III	S-3
		46	6	14	14.1	2007	Pine		III	S-1
		46	6	14.1	0.4	2009	Eucalyptus		III	S-15
		46	6	15.1	0.7	2007	Pine		III	S-1
		46	6	15.11	0.6	2009	Schima		III	S-11
		47	6	15.2	1.9	2009	Pine		III	S-3

		47	6	15.21	1.6	2009	Schima		III	S-11
		48	8	8	5.2	2009	Pine		III	S-3
		48	8	8.01	2.1	2009	Schima		III	S-11
		48	8	9	5	2009	Pine		III	S-3
		48	8	9.01	0.9	2009	Schima		III	S-11
		48	8	10	1.4	2009	Pine		III	S-3
		48	8	10.01	0.8	2009	Schima		III	S-11
		48	8	20	7.2	2009	Pine	C45	III	S-3
		48	8	20.01	1.7	2009	Schima	C46	III	S-11
		48	8	20.02	1	2009	Schima		III	S-11
	Dayan	50	5	10	1	2008	Pine		III	S-2
		50	5	15	1.3	2008	Pine		III	S-2
Xindi	Diancun	26	1	3.1	7.7	2006	Eucalyptus	C35	III	S-13
		26	1	4.1	54.2	2006	Eucalyptus	C37\C38	III	S-13
		26	1	5	6.5	2006	Eucalyptus	C36	III	S-13
		32	1	6.1	14.6	2006	Eucalyptus		III	S-13
		32	1	7	8.9	2006	Eucalyptus		III	S-13
		32	1	8	6.1	2006	Eucalyptus		III	S-13
		32	1	9	10.2	2006	Eucalyptus		III	S-13
		33	1	10	3.5	2006	Eucalyptus		III	S-13
		32	2	1	8.1	2006	Eucalyptus	C39	III	S-13
		35	2	2	6	2006	Eucalyptus		III	S-13
		32	2	3	5.3	2006	Eucalyptus		III	S-13
		34	2	3.1	2.6	2006	Eucalyptus		III	S-13
		36	2	8.1	5.3	2006	Eucalyptus		III	S-13
		37	2	8.2	6.3	2006	Eucalyptus		III	S-13
		26	3	1	45.9	2006	Eucalyptus	C40\C41	III	S-13
		26	3	2.1	10.4	2007	Pine		III	S-1
		26	3	2.11	8.4	2009	Schima		III	S-11
		27	3	2.2	2.1	2007	Pine		III	S-1
		27	3	2.21	1.9	2009	Schima		III	S-11
		26	3	2.3	6.5	2006	Eucalyptus	C42	III	S-13
		27	3	3.1	4.9	2007	Pine		III	S-1
		27	3	3.11	3.4	2009	Schima		III	S-11
		27	3	4	0.2	2007	Eucalyptus		III	S-13
		27	3	4.1	1.1	2007	Pine		III	S-1
		30	3	4.2	16.3	2007	Eucalyptus		III	S-13
		31	3	4.3	1.4	2007	Pine		III	S-1

		30	3	4.4	0.7	2007	Pine		III	S-1
		30	3	4.41	0.2	2009	Schima		III	S-11
		26	3	6	6.9	2006	Eucalyptus		III	S-13
		27	4	1.1	3.3	2008	Pine		III	S-2
		27	4	1.11	1	2010	Pine		III	S-3
		27	4	1.12	1.2	2010	Pine		III	S-3
		28	4	1.2	1.9	2008	Pine		III	S-2
		28	4	1.21	1.4	2010	Pine		III	S-3
		27	4	7.1	4.3	2008	Pine		III	S-2
		27	4	7.11	1.1	2010	Pine		III	S-3
		29	4	7.2	0.7	2008	Pine		III	S-2
		29	4	7.21	0.3	2010	Pine		III	S-3
	Dongxin	24	1	18.1	3.4	2008	Pine		III	S-2
		24	1	18.11	1.2	2008	Oak		III	S-19
		24	1	19	2.3	2008	Pine		III	S-2
		24	1	19.01	1.1	2008	Oak		III	S-19
		24	2	4	7.8	2008	Pine		III	S-2
		24	2	4.01	1.5	2008	Oak	C33	III	S-19
		24	2	4.02	0.9	2008	Oak		III	S-19
		24	2	5	1.6	2008	Pine		III	S-2
		24	2	5.01	0.6	2008	Oak		III	S-19
		24	2	6.1	2.4	2008	Pine		III	S-2
		24	2	6.11	0.6	2008	Oak		III	S-19
		26	2	6.12	8	2008	Pine		III	S-2
		26	2	6.2	4	2008	Eucalyptus		III	S-15
		26	2	7.1	1.9	2008	Pine		III	S-2
		25	2	7.2	0.4	2008	Pine		III	S-2
		26	2	8.1	19.8	2008	Pine	C34	III	S-2
		26	2	8.2	2.3	2008	Pine		III	S-2
		26	2	8.21	0.5	2008	Oak		III	S-19
		26	2	9.1	2.8	2008	Pine		III	S-2
		26	5	8.1	8.2	2008	Pine		III	S-2
		26	5	8.11	5.4	2008	Oak		III	S-19
	Xuncun	49	4	2	8.6	2011	Pine	replanted	III	S-3
		49	4	2.01	1.5	2011	Schima	replanted	III	S-12
		49	4	2.02	3	2011	Schima	replanted	III	S-12
		49	4	5	17.5	2011	Pine	Replanted /C48	III	S-3
		49	4	5.01	3	2011	Schima	Replanted /C47	III	S-12
		49	4	5.02	3.6	2009	Oak	C49	III	S-19
		49	4	6	1.5	2007	Pine		III	S-1
		49	4	6.01	0.5	2009	Oak		III	S-19
		49	5	1	1.9	2007	Pine		III	S-1
		49	5	1.1	0.7	2007	Pine		III	S-1

		20	1	1.1	10.7	2011	Pine	replanted	III	S-3
		20	1	1.12	0.4	2011	Schima	replanted	III	S-12
		20	1	1.11	2.2	2011	Schima	replanted	III	S-12
		21	1	1.2	8.3	2011	Pine	Replanted /C29	III	S-3
		21	1	1.21	2.1	2011	Schima	replanted	III	S-12
		21	1	1.22	1.1	2008	Oak		III	S-19
		20	1	2.1	4.1	2011	Pine	replanted	III	S-3
		20	1	2.11	3.7	2011	Schima	replanted	III	S-12
	Dacun	21	1	2.12	5.8	2008	Pine		III	S-2
		21	1	2.13	0.1	2008	Schima		III	S-11
		21	1	2.14	1.2	2008	Schima		III	S-11
		20	1	3	2.1	2011	Pine	replanted	III	S-3
		20	1	3.01	1.4	2011	Schima	replanted	III	S-12
		20	1	3.02	0.5	2011	Schima	Replanted /C26	III	S-12
		21	1	5.1	0.3	2008	Pine		III	S-2
		21	1	5.11	0.6	2008	Schima		III	S-11
		21	1	6.1	3.1	2008	Pine		III	S-2
		21	1	6.11	3.3	2008	Schima	C32	III	S-11
	Datong	22	1	1.1	7.5	2006	Eucalyptus		III	S-13
		22	1	1.2	15.9	2007	Pine	C16	III	S-1
		22	1	1.21	6.2	2007	Schima		III	S-10
		22	1	1.3	0.6	2006	Eucalyptus		III	S-13
		22	1	2	45.7	2006	Eucalyptus	C20	III	S-13
		22	1	4.1	11	2006	Eucalyptus	C24	III	S-13
		22	1	4.2	11.7	2007	Pine		III	S-1
		22	1	4.21	5.1	2007	Schima		III	S-10
		23	1	5.1	5.7	2006	Eucalyptus	C30	III	S-13
		22	1	6.1	20.5	2006	Eucalyptus		III	S-13
		22	1	6.2	3.3	2006	Eucalyptus		III	S-13
		22	2	1	13.9	2006	Eucalyptus	C17	III	S-13
		22	2	2	18.8	2006	Eucalyptus	C19\C22	III	S-13
		22	2	3	13.8	2006	Eucalyptus		III	S-13
		20	2	4	6.8	2006	Eucalyptus		III	S-13
		20	2	5	4.1	2006	Eucalyptus		III	S-13
		22	2	7	24.9	2006	Eucalyptus	C25	III	S-13
		22	2	8.1	19.1	2006	Eucalyptus	C23\C27	III	S-13
		20	3	1	21.2	2006	Eucalyptus		III	S-13
		20	3	5	6.4	2006	Eucalyptus		III	S-13

		21	3	7	6.4	2008	Pine	C31	III	S-2
		21	3	7.01	3.2	2009	Schima		III	S-11
		22	4	1.1	13.1	2006	Eucalyptus	C28	III	S-13
		22	4	2.1	5.1	2006	Eucalyptus		III	S-13
		22	4	2.2	1.9	2006	Eucalyptus		III	S-13
		23	4	3.1	2.7	2006	Eucalyptus		III	S-13
		22	4	5.1	3.2	2006	Eucalyptus		III	S-13
Longxu	Enyi	16	5	1.1	1.1	2008	Pine		III	S-2
		16	5	2	2.9	2008	Pine		III	S-2
		16	5	3	0.4	2008	Pine		III	S-2
		17	5	3.1	0.7	2008	Pine		III	S-2
		17	5	3.11	0.3	2008	Oak		III	S-19
		17	5	3.12	0.1	2008	Oak		III	S-19
		16	5	4	2.1	2008	Pine		III	S-2
		16	5	4.01	0.2	2008	Oak		III	S-19
		16	5	4.02	0.4	2008	Oak		III	S-19
		16	5	5	1.7	2008	Pine		III	S-2
		16	5	5.01	0.7	2008	Oak		III	S-19
		16	5	6	1.5	2008	Pine		III	S-2
		16	5	7	2.8	2009	Eucalyptus	C14	III	S-15
		16	5	9	1.8	2009	Eucalyptus		III	S-15
		16	5	10	4.5	2008	Pine		III	S-2
		16	5	10.01	0.7	2008	Oak		III	S-19
		16	5	10.02	0.7	2008	Oak		III	S-19
		16	5	10.1	0.6	2009	Eucalyptus		III	S-15
		16	5	11	0.8	2008	Pine		III	S-2
		16	5	11.01	0.9	2008	Oak		III	S-19
		16	5	11.02	0.2	2009	Oak		III	S-19
		17	5	12	1.1	2008	Pine		III	S-2
		17	5	12.01	0.1	2008	Oak		III	S-19
		17	5	12.02	0.5	2008	Oak		III	S-19
		17	5	13	0.4	2008	Pine		III	S-2
		17	5	13.01	0.4	2008	Oak		III	S-19
		17	5	14	1.7	2008	Pine		III	S-2
		17	5	14.01	0.1	2008	Oak		III	S-19
		17	5	14.02	1.1	2008	Oak		III	S-19
		16	5	15	1.5	2008	Pine		III	S-2
		16	5	15.01	0.7	2008	Oak		III	S-19
		16	5	15.02	0.2	2008	Oak		III	S-19
		16	5	16	2.6	2008	Pine		III	S-2
		16	5	16.01	0.6	2008	Oak	C15	III	S-19
		16	5	16.02	0.5	2008	Oak		III	S-19

		16	5	16.03	0.2	2009	Oak		III	S-19
		16	5	17	0.1	2008	Pine		III	S-2
		16	5	17.01	0.2	2008	Oak		III	S-19
		16	5	18	0.9	2008	Pine		III	S-2
		16	5	18.01	1	2008	Oak		III	S-19
		16	5	18.1	0.3	2009	Eucalyptus		III	S-15
	Daen	19	9	3.1	1.9	2011	Pine	replanted	III	S-3
		18	9	4.1	4.8	2011	Pine	replanted	III	S-3
		20	9	12.1	1.4	2011	Pine	replanted	III	S-3
		20	9	12.11	0.7	2011	Schima	replanted	III	S-12
		20	9	12.12	0.2	2011	Schima	replanted	III	S-12
		20	9	12.13	0.3	2011	Schima	replanted	III	S-12
		20	9	12.14	0.6	2011	Pine	replanted	III	S-3
		20	9	12.2	7.6	2011	Pine	replanted	III	S-3
		20	9	12.21	2.2	2011	Schima	replanted	III	S-12
		20	9	12.3	1.9	2011	Pine	replanted	III	S-3
		20	9	12.31	0.5	2011	Schima	replanted	III	S-12
		20	9	21.1	8.2	2011	Pine	Replanted /C21	III	S-3
		20	9	21.11	2.5	2011	Schima	Replanted /C18	III	S-12
		20	9	21.12	1	2011	Schima	replanted	III	S-12
		20	9	21.2	0.2	2011	Schima	replanted	III	S-12
Satou	Cantian	3	1	1.1	21	2006	Pine		I	S-1
		3	1	1.11	8.7	2006	Schima		I	S-10
		3	1	1.12	1.3	2006	Schima		I	S-10
		3	1	1.13	2.5	2006	Schima	C4	I	S-10
		3	1	1.14	1.7	2006	Schima		I	S-10
		3	1	2.1	11.5	2006	Pine	C3	I	S-1
		3	1	2.11	4.8	2006	Schima	C1	I	S-10
		3	1	2.12	0.4	2006	Schima		I	S-10
		3	1	2.13	2.8	2006	Schima		I	S-10
		3	1	3.1	5.2	2006	Pine		I	S-1
		3	1	3.11	3.6	2006	Schima		I	S-10
		3	1	5.1	3.2	2006	Pine		I	S-1
		3	1	5.11	1	2006	Schima		I	S-10
		3	1	5.12	0.6	2006	Schima		I	S-10
		4	1	6	0.7	2006	Pine		I	S-1
		4	1	6.01	0.3	2006	Schima		I	S-10
		4	1	7.1	3.1	2006	Pine		I	S-1
		4	1	7.11	3.4	2006	Schima		I	S-10
		4	1	7.12	0.3	2006	Schima		I	S-10
		3	1	11	24.2	2006	Pine	C2	I	S-1
		3	1	11.01	12.4	2006	Schima		I	S-10
		3	1	11.02	1.7	2006	Schima		I	S-10

		3	1	11.03	1.8	2006	Schima		I	S-10
		3	1	12	4.5	2006	Pine		I	S-1
		3	1	12.01	3	2006	Schima		I	S-10
		3	2	1.1	6.2	2006	Pine		I	S-1
		3	2	1.11	3.3	2006	Schima		I	S-10
		3	2	2	1.4	2006	Pine		I	S-1
		3	2	2.01	1.9	2006	Schima		I	S-10
		7	20	1.1	2.5	2006	Pine		I	S-1
		7	20	1.11	1	2006	Schima		I	S-10
		7	20	4.1	0.6	2006	Pine		I	S-1
		7	20	4.11	0.3	2006	Schima		I	S-10
		9	21	1.1	10.7	2006	Pine		I	S-1
		9	21	1.11	5.4	2006	Schima		I	S-10
		9	21	1.12	0.4	2006	Schima		I	S-10
		10	21	1.2	0.3	2006	Pine		I	S-1
		10	21	1.21	0.5	2006	Schima		I	S-10
		7	21	3.1	5.9	2006	Pine		II	S-1
		7	21	3.11	1	2006	Schima		II	S-10
		7	21	3.12	2.6	2006	Schima		II	S-10
		9	22	3.1	7.6	2006	Pine		I	S-1
		9	22	3.11	0.8	2006	Schima		I	S-10
		9	22	3.12	0.3	2006	Schima		I	S-10
		9	22	3.13	3.3	2006	Schima		I	S-10
		9	22	4.1	4.5	2006	Pine		I	S-1
		9	22	4.11	3.4	2006	Schima		I	S-10
		9	22	5.1	4.9	2006	Pine		I	S-1
		9	22	5.11	3.8	2006	Schima		I	S-10
		10	22	5.2	0.3	2006	Pine		I	S-1
		9	22	6.1	2.2	2006	Pine		I	S-1
		9	22	6.11	1.1	2006	Schima		I	S-10
		9	22	6.12	0.4	2006	Schima		I	S-10
		11	28	1	9	2008	Pine		I	S-2
		11	28	1.01	4.5	2008	Schima		I	S-11
		11	28	2	5.4	2008	Pine		I	S-2
		11	28	2.01	1	2008	Schima		I	S-11
		11	28	2.02	0.9	2008	Schima		I	S-11
		11	28	2.03	1.3	2008	Schima		I	S-11
		11	28	3	10	2008	Pine		I	S-2
		11	28	3.01	4.7	2008	Schima	C8	I	S-11
		11	28	4	1	2008	Pine		I	S-2
		11	28	4.01	0.7	2008	Schima		I	S-11
		12	29	1	10.5	2006	Pine		I	S-1
		12	29	1.01	2.4	2006	Pine		II	S-1
		12	29	1.02	2.7	2006	Schima		I	S-10
		12	29	1.03	0.2	2006	Schima		I	S-10

		12	29	4	17.4	2006	Pine	C9	II	S-1
		12	29	4.01	4.9	2006	Schima		II	S-10
		12	29	4.02	0.5	2006	Schima		II	S-10
		12	29	4.03	0.3	2006	Schima		II	S-10
		12	29	5	20.6	2006	Pine		I	S-1
		12	29	5.01	4.3	2006	Schima	C10	I	S-10
		12	29	5.02	3.9	2006	Schima		I	S-10
		12	29	7	13.8	2006	Pine		I	S-1
		12	29	7.01	5.5	2006	Schima		I	S-10
		12	29	7.02	3	2006	Schima		I	S-10
	Shichuan	1	3	10	0.5	2007	Pine		I	S-1
		1	3	10.02	1	2009	Schima		I	S-11
		1	3	13	12.4	2007	Pine		I	S-1
		1	3	13.01	4.3	2009	Schima		I	S-11
		1	3	13.02	0.5	2009	Schima		I	S-11
		1	3	10.01	0.2	2007	Pine		I	S-1
		2	6	10.2	3.7	2009	Pine		I	S-3
		2	6	10.21	2.4	2009	Schima		I	S-11
		2	6	10.22	0.5	2009	Schima		I	S-11
		2	6	11	3.2	2009	Pine		I	S-3
		2	6	11.01	0.1	2009	Schima		I	S-11
		2	6	11.02	2.6	2009	Schima		I	S-11
		6	7	14	0.7	2007	Pine		I	S-1
		6	7	14.01	0.9	2007	Schima		I	S-10
		6	7	15.1	12	2007	Pine		I	S-1
		6	7	15.11	2.5	2007	Schima		I	S-10
		6	7	15.12	5.3	2007	Schima		I	S-10
		5	8	4	3.5	2006	Pine		I	S-1
		5	8	4.01	1.1	2006	Schima		I	S-10
		6	11	1	1.3	2007	Pine		I	S-1
		6	11	1.01	0.2	2007	Schima		I	S-10
		6	11	1.02	0.1	2007	Schima		I	S-10
		6	11	2	1.2	2007	Pine		I	S-1
		6	11	2.01	0.1	2007	Schima		I	S-10
		6	11	2.02	0.2	2007	Schima		I	S-10
		6	11	3	3.9	2007	Pine		I	S-1
		6	11	3.01	1.4	2007	Pine		I	S-1
		6	11	3.01	0.2	2007	Schima		I	S-10
		6	11	3.02	3.5	2007	Schima		I	S-10
		6	11	3.02	0.1	2007	Schima		I	S-10
		6	11	3.03	3.6	2007	Schima		I	S-10
		6	11	3.03	1.1	2007	Schima		I	S-10
		6	11	3.1	12.1	2007	Pine	C5	I	S-1
		6	11	4.1	9	2007	Pine		I	S-1
		6	11	4.11	3.8	2009	Schima		I	S-11

		6	11	8.1	19	2007	Pine		I	S-1
		6	11	8.11	0.5	2007	Schima		I	S-10
		6	11	8.12	2.4	2007	Schima		I	S-10
		6	11	9.1	2.3	2009	Schima		I	S-11
		7	17	12	3.9	2006	Pine		I	S-1
		7	17	12.01	2.4	2006	Schima		I	S-10
		8	21	9.1	4.6	2006	Pine		I	S-1
		8	21	9.11	1.2	2006	Schima		I	S-10
		8	21	9.12	0.5	2006	Schima		I	S-10
		8	21	9.13	0.3	2006	Schima		I	S-10
		7	21	9.2	15.7	2006	Pine	C6	I	S-1
		7	21	9.21	5.3	2006	Schima	C7	I	S-10
		7	21	9.22	3.8	2006	Schima		I	S-10
		7	21	9.23	0.9	2006	Schima		I	S-10
	Shentang	15	6	2	10.3	2008	Pine	C11	I	S-2
		15	6	2.01	6.6	2009	Schima		I	S-11
		15	6	3	6.4	2008	Pine		I	S-2
		15	6	3.01	4.4	2009	Schima		I	S-11
		14	6	3.1	1.8	2008	Pine		I	S-2
		14	6	3.11	1.7	2009	Schima		I	S-11
		13	6	4	2.4	2008	Pine		I	S-2
		13	6	4.01	2.1	2009	Schima		I	S-11
		13	6	5	9.4	2008	Pine		I	S-2
		13	6	5.01	6.3	2009	Schima		I	S-11
		15	7	2	3.1	2008	Pine		I	S-2
		15	7	2.01	3.3	2009	Schima		I	S-11
		15	7	4	10.4	2008	Pine		I	S-2
		15	7	4.01	7.6	2009	Schima	C12	I	S-11
		15	7	5	9.2	2008	Pine		I	S-2
		15	7	5.01	7	2009	Schima		I	S-11
		15	15	2	12	2008	Pine	C13	I	S-2
		15	15	2.01	7.4	2009	Schima		I	S-11
		15	15	2.02	1.3	2009	Schima		I	S-11
		15	15	3	1.2	2008	Pine		I	S-2
		15	15	3.11	0.9	2009	Schima		I	S-11
		15	15	4	0.9	2008	Pine		I	S-2
		15	15	4.01	1.4	2009	Schima		I	S-11
		15	15	10	0.9	2008	Pine		I	S-2
		15	15	10.01	0.8	2009	Schima		I	S-11
		15	15	11	4.8	2008	Pine		I	S-2
		15	15	11.01	2.2	2009	Schima		I	S-11
Huanjiang County										
xunle	Taiping	34	7	11.1	22.5	2008	Eucalyptus	Replanted /H36\H53	IV	S-15
		32	6	7.6.1	17.5	2008	Eucalyptus	replanted	IV	S-15

		32	6	7.6.2	1.3	2008	Pine		IV	S-4
		33	6	7.6.3	8.1	2008	Eucalyptus	Replanted /H34	IV	S-15
	Shangang	1	11	4.1	0.8	2008	Pine	replanted	VI	S-5
		1	24	3.1	9.9	2008	Pine	replanted	VI	S-5
		1	25	4.1	20.7	2008	Pine	replanted	VI	S-5
		2	25	5	5.4	2008	Pine+Maple	Replanted /H4	VI	S-21
		1	25	4.2	41.4	2008	Pine	Replanted /H1	VI	S-5
		1	25	4.3.1	23.3	2008	Pine	Replanted /H2	VI	S-5
		1	25	4.3.2	3.4	2008	Maple	Replanted /H3	VI	S-18
		1	26	7.1.1	17.1	2008	Pine	Replanted /H5	VI	S-5
		1	26	7.1.2	9	2008	Maple	replanted	VI	S-18
		1	26	7.2.1	10.1	2008	Pine	replanted	VI	S-5
		1	26	7.2.2	3.5	2008	Maple	replanted	VI	S-18
		1	26	7.2.3	1	2008	Chinese fir		VI	S-8
		2	26	7.2.4	0.4	2008	Pine	replanted	VI	S-5
		2	26	7.2.5	7.5	2008	Pine+Maple	replanted	VI	S-21
		2	26	7.3.1	21	2008	Pine+Maple	replanted	VI	S-21
		2	26	7.3.2	0.7	2008	Chinese fir		VI	S-8
		2	27	6.1	5.1	2008	Pine+Maple	replanted	VI	S-21
		3	31	4.1	5.9	2008	Chinese fir	H6	VI	S-8
		2	31	5.1	0.7	2008	Pine+Maple	replanted	VI	S-21
Chuanshan	Hedun	44	1	12.1.1	13.6	2011	Pine		IV	S-6
		45	1	12.1.2	0.8	2011	Pine		IV	S-6
		45	1	12.1.3	4.9	2011	Pine		IV	S-6
		45	1	12.1.4	0.2	2011	Pine		IV	S-6
		51	6	3.1	30.7	2010	Eucalyptus	Replanted /H45/H46	IV	S-16
		52	6	3.2	4.8	2010	Eucalyptus	replanted	IV	S-16
		52	6	3.3	19	2010	Eucalyptus	Replanted /H49	IV	S-16
		53	6	3.4	5.2	2010	Eucalyptus	replanted	IV	S-16
		46	12	7.1.1	19.1	2006	Maple	H41\H42	IV	S-17
		46	12	7.1.2	13.7	2006	Pine+Maple	H43	IV	S-20
		47	12	7.2	0.8	2006	Pine+Maple		IV	S-20
		48	18	10.1.1	2.9	2006	Eucalyptus		IV	S-13
		49	18	10.1.2	2	2006	Eucalyptus		IV	S-13
		50	18	10.1.3	6.6	2006	Eucalyptus		IV	S-13
Mulun	Leyi	54	5	4.1.1	0.6	2006	Pine+Maple		VII	S-20

		54	5	4.1.2	0.3	2006	Eucalyptus		VII	S-13
		54	5	4.1.3	10.6	2006	Pine+Maple	Replanted /H50\H51	VII	S-20
		54	5	4.1.4	15.1	2008	Pine	Replanted /H52	VII	S-4
		54	5	4.1.5	6.3	2008	Pine	replanted	VII	S-4
		54	5	4.1.6	1.5	2008	Maple	replanted	VII	S-18
		54	6	4.1.1	3	2008	Maple	replanted	VII	S-18
		54	6	4.1.2	9.9	2008	Pine	replanted	VII	S-4
Minglun	Minglun	35	23	13.1	39.5	2010	Eucalyptus	Replanted /H44	IV	S-16
		35	23	13.2.1	13.7	2010	Pine	H48	IV	S-6
		35	23	13.2.2	6	2010	Eucalyptus	replanted	IV	S-16
	Baixiang	35	9	4.1	7.3	2010	Pine		IV	S-6
		35	9	4.2.1	11.5	2008	Eucalyptus	H47	IV	S-15
		35	9	4.2.2	6.1	2010	Eucalyptus	replanted	IV	S-16
		35	9	4.3	1.8	2010	Eucalyptus	replanted	IV	S-16
	Cuishan	23	1	2.1.1	9.9	2008	Pine	replanted	VI	S-4
		23	1	2.1.2	4.9	2008	Maple		VI	S-18
		23	1	2.2.1	3.3	2008	Pine	replanted	IV	S-4
		23	1	2.2.2	6.5	2008	Maple	replanted	IV	S-18
		23	1	2.2.3	19	2008	Pine	replanted	IV	S-4
		25	1	2.4	6.5	2008	Eucalyptus	replanted	VI	S-14
		23	1	2.5.1	7.3	2008	Pine	replanted	VI	S-4
		23	1	2.5.2	2.8	2008	Maple	replanted	VI	S-18
		23	1	2.5.3	5.9	2008	Pine	replanted	VI	S-4
		23	1	2.6	3.4	2008	Maple	Replanted /H16	IV	S-18
		24	1	2.8.1	8.4	2008	Pine	replanted	IV	S-4
		24	1	2.8.2	5.3	2008	Maple	replanted	IV	S-18
		23	2	2.1.1	5	2008	Maple	replanted	VI	S-18
		23	2	2.1.2	6.6	2008	Pine	Replanted /H17	VI	S-4
		27	3	2.0.1	13.5	2011	Pine	replanted	VI	S-6
		26	3	2.0.2	1.1	2009	Pine		VI	S-6
		28	4	5.1	3.9	2008	Eucalyptus	replanted	VI	S-14
		29	5	7.1.1	0.5	2008	Eucalyptus	replanted	IV	S-14
		30	5	7.1.2	4.9	2008	Eucalyptus	Replanted /H28	IV	S-14
		31	5	7.2	30.3	2008	Eucalyptus	Replanted /H31	IV	S-14
Longyan	Huangzhong	4	8	13.1	6.6	2007	Chinese fir		VI	S-7
		4	10	18.1.1	6.9	2008	Pine		VI	S-4
		4	10	18.1.2	12.1	2008	Pine+Maple	H7	VI	S-21
		4	10	25.1.1	2.6	2008	Chinese fir		V	S-8

		4	10	25.1.2	24.5	2008	Pine+Maple	H8	V	S-21
		4	10	25.1.3	0.8	2008	Maple		V	S-18
		5	11	9.1.1	10.8	2006	Chinese fir	H9	VI	S-7
		5	11	9.1.2	6	2006	Chinese fir		VI	S-7
		6	15	1.1	10.4	2007	Pine		VI	S-4
		7	16	11.1.1	25.8	2008	Pine		VI	S-4
		6	16	11.1.2	1.1	2008	Pine		VI	S-4
		6	16	11.1.3	1.1	2008	Chinese fir		VI	S-8
		7	16	11.1.4	2.8	2008	Pine		VI	S-4
		7	16	11.2.1	13	2008	Pine	H10	V	S-4
		7	16	11.2.2	2.3	2008	Maple		V	S-18
	Jiuwei	23	1	2.1.1	20.3	2008	Pine	Replanted /H15	IV	S-4
		23	1	2.1.2	0.2	2008	Pine	replanted	VI	S-4
		23	1	2.1.3	8.2	2008	Pine	replanted	VI	S-4
		23	1	5.1.1	27.8	2008	Pine	replanted	VI	S-4
		23	1	5.1.2	11.1	2011	Pine		IV	S-6
		23	1	5.1.3	1.6	2008	Pine	replanted	IV	S-4
	Dake	15	5	7.1	3.2	2008	Pine		VI	S-4
		16	5	7.1.2	14.2	2008	Pine+Chinese fir	H20	VI	S-22
		18	6	8.1	6.8	2008	Pine		VI	S-4
		19	6	8.2	24.9	2008	Pine+Chinese fir	H23\H25	VI	S-22
		17	7	6.1.1	16.4	2011	Pine	Replanted /H21	VI	S-6
		20	7	6.1.2	2.6	2008	Pine	H22	VI	S-4
		20	7	6.1.3	7	2011	Pine		VI	S-6
		20	7	6.1.4	0.5	2008	Pine		VI	S-4
		20	7	6.1.5	7.8	2008	Pine		VI	S-4
		19	7	6.2.1	2.4	2009	Pine		VI	S-6
		19	7	6.2.2	1.5	2008	Chinese fir		VI	S-8
		19	7	6.2.3	12.9	2009	Pine	H24	VI	S-6
		19	7	6.2.4	0.3	2008	Chinese fir		VI	S-8
		19	7	6.2.5	4.8	2011	Pine		VI	S-6
		19	7	6.2.6	0.3	2008	Chinese fir		VI	S-8
		19	7	6.2.7	0.5	2008	Chinese fir		VI	S-8
		19	7	6.2.8	0.7	2008	Chinese fir		VI	S-8
		19	7	6.2.9	1.9	2011	Pine		VI	S-6
		19	7	6.2.10	1.4	2008	Chinese fir		VI	S-8
		20	8	8.1.1	5.2	2009	Pine		VI	S-6
		20	8	8.1.2	19.8	2008	Chinese fir	H26	VI	S-8
		20	8	8.1.3	7.5	2009	Pine		VI	S-6
		20	8	8.1.4	12.8	2011	Chinese fir	H27\H29	VI	S-9
		20	8	8.1.5	1.3	2008	Chinese fir		VI	S-8
		20	8	8.1.6	1.4	2008	Chinese fir		VI	S-8
		20	8	8.2.1	7	2009	Pine		VI	S-6

		20	8	8.2.2	2.6	2008	Pine		VI	S-4
		20	8	8.2.3	2.6	2008	Chinese fir		VI	S-8
		20	8	8.2.4	9.3	2008	Pine		VI	S-4
		20	8	8.2.5	10.5	2008	Chinese fir		VI	S-8
		20	8	8.2.6	3.3	2011	Chinese fir		VI	S-9
		22	18	6.1.1	3	2007	Chinese fir	H30	VI	S-7
		22	18	6.1.2	4.4	2011	pine	H32	VI	S-6
		22	18	6.1.3	11.4	2007	Chinese fir	H35	VI	S-7
		22	18	6.1.4	1.3	2007	Maple		VI	S-17
		22	18	6.1.5	2.1	2007	Pine		VI	S-4
	Chaoge	11	21	6.1	25.5	2008	Pine		V	S-5
		12	21	6.2	16.1	2008	Pine	H14	V	S-5
		10	23	12.0.1	39.7	2008	Pine	H13	V	S-4
		10	23	12.2	7.2	2008	Pine+Maple		V	S-21
		10	23	13	18.6	2008	Pine	H12	V	S-4
		9	24	22.1	11.4	2008	Pine		V	S-4
		10	24	22.2	6.5	2008	Pine		V	S-4
		14	28	25.1.1	0.4	2008	Chinese fir		VI	S-8
		14	28	25.1.2	23.2	2008	Pine		VI	S-4
		14	28	25.1.3	0.1	2008	Chinese fir		VI	S-8
		14	28	25.1.4	3.4	2008	Chinese fir		VI	S-8
		15	29	27.1	1.5	2008	Chinese fir		VI	S-8
		13	29	27.2.1	9.1	2008	Chinese fir	H18	V	S-8
		13	29	27.2.2	2	2008	Pine		V	S-4
		15	29	27.2.3	11.9	2008	Pine+Chinese fir		VI	S-22
		13	30	15.1	18.1	2008	Pine		V	S-4
		13	30	15.2.1	8.4	2008	Pine		V	S-4
		13	30	15.2.2	28.3	2008	Chinese fir	H19	V	S-8
	Longyan	21	1	2.1	5	2007	Maple		VI	S-17
		22	2	8.1.1	15.7	2007	Pine		VI	S-4
		22	2	8.1.2	5.5	2007	Maple	H33	VI	S-17
	Chenghuang	8	11	3.2.1	27.8	2008	Pine		VI	S-4
		8	11	3.2.2	7.1	2008	Maple	H11	VI	S-18
Shangchao	Beishan	37	9	6.1	23.4	2008	Eucalyptus	replanted	IV	S-15
		36	11	14.1.1	24.2	2008	Eucalyptus	Replanted /H38	IV	S-15
		36	11	14.1.2	7	2011	Eucalyptus	replanted	IV	S-16
		39	20	10.2.1	2.5	2006	Eucalyptus		IV	S-13
		40	20	10.2.2	12.6	2006	Eucalyptus		IV	S-13
		37	20	10.3	13.4	2008	Eucalyptus	Replanted /H37	IV	S-14
		38	20	10.1	17.9	2011	Pine	H39	IV	S-6
		41	23	16.1	1.5	2006	Eucalyptus	H40	IV	S-13

		42	31	6.1	3.8	2008	Eucalyptus	replanted	IV	S-14
		43	31	6.2	2.4	2008	Eucalyptus	replanted	IV	S-15
		41	31	19.1	5.4	2006	Eucalyptus	replanted	IV	S-13

Annex II Sub compartment monitoring card

Item	Monitoring record			Comments
Location	County			
	Town/Township			
	Village			
	Compartment			
	Sub-compartment			
Production model	Entity			
	Production arrangements and management models			
Tree species	Species 1			
	Species 2			
	ratio			
Area	Sub-compartment area (ha)			
	Planted area (ha)			
Project boundary	Measurement date	Description of changes		
Site preparation	date			signed evidence shall be archeved
	method			
	Size: diameter×depth (cm)			
Fertilization at planting	Type of fertilizer			signed evidence and receipt shall be archeved
	Fertilizer name			
	Produced by			
	N、P、K content (%)			
	Date of application			
	Amount applied (kg/tree)			
	Type of vehicle for transport			
	load（t/vehicle）			
	Number of vehicle			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
planting		initial	Re-planting	
	date			
	tree/ha			
Seedlings	Seed source	Initial planting	Re-planting	signed evidence and receipt shall be archeved
	Seedling type			
	Seedling age			
	Location of seedlings			
	Date of purchasement			
	Amount			
	Type of vehicle for transport			
	load（seedlings/vehicle）			
	Number of vehicle			
	Oil consumption (l/100km)			
	Oil type			

	Transport distance (km)			
Survival checking	date			
	Survival rate (%)			
Fertilization after planting	date			signed evidence and receipt shall be archeved
	Type of fertilizer			
	Fertilizer name			
	Produced by			
	N、P、K content (%)			
	Date of application			
	Amount applied (kg/tree)			
	Type of vehicle for transport			
	load（t/vehicle）			
	Number of vehicle			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
Tending or thinning	date			
	method			
	activities			
	intensity			
Final survival check	date			
	Survival rate (%)			
Forest pests	date			
	Type of pest			
	Area (ha)			
	Location (GPS boundary)			
	Injured intensity			
	countermeasures			
Forest fire	date			
	Fired area (ha)			
	Location (GPS boundary)			
	Injured intensity			
Harvest or resin collection	date			
	method			
	species			
	Timber output (m3/ha)			
	Resin output(t)			
	Transportation mode			
	Vehicle type			
	Load (M3/vehicle)			
	Load (t resin/vehicle)			
	Number of vehicles			
	Oil consumption (l/100km)			
	Oil type			
	Transport distance (km)			
regeneration	date			
	approach			
	Regeneration condition			

Annex III Field record form template for sampling plot

County ____Township/town ____Village ___ Compartment ID____Subcompartment ID _____,
location ____ stratum ID_____sample plot ID ___ planting time:
Geo-coordinate of sample plot: Longitude: Latitude
No. of landform map: _____Plantation species:

Serial No.	Species	Height (m)	DBH (cm)	Serial No.	Species	Height (m)	DBH (cm)	Serial No.	Species	Height (m)	DBH (cm)
1				51				101			
2				52				102			
3				53				103			
4				54				104			
5				55				105			
6				56				106			
7				57				107			
8				58				108			
9				59				109			
10				60				110			
11				61				111			
12				62				112			
13				63				113			
14				64				114			
15				65				115			
16				66				116			
17				67				117			
18				68				118			
19				69				119			
20				70				120			
21				71				121			
22				72				122			
23				73				123			
24				74				124			
25				75				125			
26				76				126			
27				77				127			
28				78				128			

29				79				129			
30				80				130			
31				81				131			
32				82				132			
33				83				133			
34				84				134			
35				85				135			
36				86				136			
37				87				137			
38				88				138			
39				89				139			
40				90				140			
41				91				141			
42				92				142			
43				93				143			
44				94				144			
45				95				145			
46				96				146			
47				97				147			
48				98				148			
49				99				149			
50				100				150			

Name of measurement: (signature)

Date of measurement: